



KAYSVILLE CITY

STORM WATER

MANAGEMENT PROGRAM

Permit No. UTR090000

Updated November 2021

Assisted by J-U-B ENGINEERS, Inc.

INTRODUCTION

Polluted storm water runoff is often transported to municipal separate storm sewer systems (MS4s) and ultimately discharged into local streams without treatment. EPA's Storm Water Phase II Rule establishes an MS4 storm water management program that is intended to improve the Nation's waterways by reducing the quantity of pollutants that are introduced into storm sewer systems during storm events. Common pollutants include oil and grease from roadways, roadway salts and deicing materials, pesticides and fertilizers from lawns, sediment from construction sites, and carelessly discarded trash, such as cigarette butts, paper wrappers, and plastic bottles. When deposited into nearby waterways through MS4 discharges, these pollutants can impair the waterways, thereby discouraging use of the resource, contaminating water supplies, and interfering with the habitat for fish, other aquatic organisms, and wildlife.

In 1990, EPA promulgated rules establishing Phase I of the National Pollutant Discharge Elimination System (NPDES) storm water program. The Phase I program for MS4s requires operators of "medium" and "large" MS4s, that is, those that generally serve populations of 100,000 or greater, to implement a storm water management program as a means to control polluted discharges from these MS4s. The Storm Water Phase II Rule extends coverage of the NPDES storm water program to certain "small" MS4s but takes a slightly different approach to how the storm water management program is developed and implemented.

In the State of Utah, the EPA has granted primacy to the State of Utah to oversee and manage the storm water program. The State has adopted the Utah Pollutant Discharge Elimination System (UPDES) for that purpose. Kaysville City has prepared this Storm Water Management Program (SWMP) to meet the requirements of the UPDES Storm Water Discharge Permit for Small MS4s.

Storm Water Management Program

A Storm Water Management Program should:

- Reduce the discharge of pollutants from the MS4;
- Protect water quality;
- Satisfy the appropriate water quality requirements of the *Utah Water Quality Act*.

Storm water management programs must include:

- Ongoing documentation processes for gathering, maintaining, and using information to conduct planning, set priorities, track the development and implementation of the SWMP, evaluate Permit compliance/non-compliance, and evaluate the effectiveness of the SWMP implementation.

- Tracking the number of inspections performed, official enforcement actions taken, and types of public education activities implemented as required for each SWMP component.
- An annual analysis of capital and operation and maintenance expenditures needed, allocated, and spent as well as the necessary staff resources needed and allocated to meet the requirements of the permit.
- Best Management Practices (BMPs) for each of the six minimum control measures (MCMs);
 1. Public Education and Outreach on Storm Water Impacts
 2. Public Involvement/Participation
 3. Illicit Discharge Detection and Elimination (IDDE)
 4. Construction Site Storm Water Runoff Control
 5. Long-Term Storm Water Management in New Development and Redevelopment (Post-Construction Storm Water Management)
 6. Pollution Prevention and Good Housekeeping for Municipal Operations
- Measurable goals for each minimum control measure (i.e., narrative or numeric standards used to gauge program effectiveness);
- Estimated months and years in which actions to implement each measure will be undertaken, including interim milestones and frequency; and
- The person or persons responsible for implementing or coordinating the Storm Water Management Program (SWMP).

Permit Application and Notice of Intent

Phase II Rule encourages the development of a storm water management program by requiring a Notice of Intent (NOI) describing the storm water management program to be submitted to the NPDES permitting authority. The Notice of Intent becomes the permit application.

Cities required to permit under Phase II are allowed to cooperate and work together with neighboring cities in the application process. The Permittee may join with a Phase I City or another Phase II City in applying for a permit. The individual MS4s may share responsibility for program development with neighboring communities and/or take advantage of existing local or state programs.

Permit Requirements

The chosen measurable goals, submitted in the Notice of Intent as a permit application, become the required storm water management program; however, the NPDES permitting authority can require changes in the mix of chosen BMPs and measurable goals if all or some of them are found to be inconsistent with the provisions of the Phase II Final Rule. Likewise, the Permittee can change its mix of BMPs if it determines that the program is not effective as it could be.

Reports

The permit requires that the City review the SWMP annually, report on our activities and make any updates that might be required. The annual reports should use the form provided by the State. Generally, the annual report should include the following information:

- The status of compliance with permit conditions, including an assessment of the appropriateness of the selected BMPs and progress toward achieving the selected measurable goals for each minimum measure;
- Results of any information collected and analyzed, including monitoring data if any;
- A summary of the storm water activities planned for the next reporting cycle;
- A change in any identified BMP or measurable goals for any minimum measure; and
- Notice of relying on another governmental entity to satisfy some of the permit obligations (if applicable).

Record Keeping

Records required by the NPDES permitting authority must be kept for at least 5 years and made accessible to the Public at reasonable times during regular business hours. Records need not be submitted to the NPDES permitting authority unless the Permittee is requested to do so.

Shared Responsibilities

Kaysville City has participated in the Davis County Coalition for the past fifteen years. A breakdown of the budget and the activities the coalition will participate in is included with this document.

Budget

Kaysville City currently has a storm water utility and the fiscal year budget is included with this document.

Deadlines

The following deadlines are included in this permit

Date	Description
November 8, 2021	Submit Updated SWMP to DEQ
October 1, 2021	Submit Annual Report to DEQ

Penalties

The NPDES permit that the operator of a regulated small MS4 is required to obtain is federally enforceable, thus subjecting the permittee to potential enforcement actions and penalties by the NPDES permitting authority if the permittee does not fully comply with application or permit requirements. This federal enforceability also includes the right for interested parties to sue under citizen suit provision (section 405) of CWA.

This document contains a description of the community-specific Storm Water Management Program for Kaysville City. The Program includes the following;

- Best Management Practices (BMPs) for each of the six minimum control measures;
 1. Public Education and Outreach
 2. Public Participation/Involvement
 3. Illicit Discharge Detection and Elimination

4. Construction Site Runoff Control
 5. Post-Construction Runoff Control
 6. Pollution Prevention/Good Housekeeping
- Measurable goals for each minimum control measure (i.e., narrative or numeric standards used to gauge program effectiveness);
 - Estimated months and years in which actions to implement each measure will be undertaken, including interim milestones and frequency; and
 - The person or persons responsible for implementing or coordinating the storm water program.

This document also contains the following information and documentation in its appendices:

- Appendix A – Supplemental Guide to Storm Water Management for Contractors and Developers
- Appendix B – Supplemental Guide to Storm Water Management for Public Works Departments
- Appendix C – Standard Operating Procedures, Documentation and Elements of the Illicit Discharge Detection and Elimination program
- Appendix D – General program documentation including inspection forms, enforcement logs, training logs, annual reports, maintenance records, observation reports, and other general documentation
- Appendix E – Copies of the most current city ordinances applicable to storm water
- Appendix F – Copies of State permits and documents regulating the Kaysville City storm water program
- Appendix G – System maps and inventories

DELEGATION OF AUTHORITY

Utah Department of Environmental Quality
Division of Water Quality
195 North 1950 West
DEQ 3rd Floor
Salt Lake City, Utah 84116
Dear Executive Director:

As the principal executive officer (or ranking elected KAYSVILLE City, I hereby official) of authorize JOSH BELNAP (insert the PUBLIC WORKS DIR. name) acting as (insert title) to act on my behalf relative to documents, reports, notices or activities pertaining to our City's Small MS4 UPDES Storm Water Discharge Permit.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Respectfully Submitted,

Name: KATIE WIL

Signature: Katie Wil

Title: Mayor

Date: Sept 12, 2018

KAYSVILLE CITY CHARACTERISTICS

General Information

The Kaysville City Storm Drain System falls under the Public Works Department for the City. A detailed organization chart can be found attached with this document. The Public Works Director can be contacted at the following address and phone number:

Mr. Josh Belnap
721 W. Old Mill Ln.
Kaysville, Utah 84037
(801) 544-8112

Some general information for Kaysville City follows:

Population: Approximately 29,994

Size: 9.89 sq. miles; 112 miles of streets

Geographic Description: 25 miles north of Salt Lake City and 15 miles south of Ogden City with elevations varying between 4220 ft. to 4380 ft.

Receiving Waters: Creeks that flow to the Great Salt Lake. Some of the western portion of the city drains directly through wetlands and into the Great Salt Lake.

Annual Precipitation: 15.83 inches per year

Type of Community: A city with moderate rates of residential growth that are expected to continue for many years.

Latitude: 41.03° N

Longitude: 111.93° W

The Kaysville storm water system consists of curb and gutters, inlet boxes, piping, a few typical open channel sections, and swales. Most storm water facilities drain to local creeks. Said creeks drain into the Great Salt Lake. There are a few detention basins that exist within the system. Many of the streets use curb and gutter to collect storm water runoff with the remaining using swales or ditches. Swales and ditches are located in the 'old town' area and other areas not yet fully developed or street improvements completed. The City is served by a sanitary sewer system that is treated by the Central Davis Sewer District. The City has an ordinance requiring any new development within 300 feet of the existing sanitary sewer to connect. There are some existing septic tank

systems in the city, but all new developments are required to connect to the public sanitary sewer system.

History

The historical development of Kaysville is directly linked to water. Pioneer settlers in 1850 selected the area's lands to establish their farms. Many new residents have selected Kaysville City as a place to raise their families. High-density housing and industrial complexes have consistently been defeated when proposed as developments for the city.

Local Water Quality Concerns

The water quality within Kaysville is relatively good. Baer Creek, running through the southern end of Kaysville has been listed for Biochemical Oxygen Demand (BOD) and Total Suspended Solids (TSS). Holmes Creek has been listed for Dissolved Copper and E.coli. None of the streams or waterways have been identified as protected under Section 303(d) of the Clean Water Act. The hope and intent of this Storm Water Management Program (SWMP) is to maintain that status and possibly even improve the current water quality.

The storm water in the city drains into creek channels, which in turn empty into the Great Salt Lake. At present the City hasn't encountered any major problems related to the storm drain system capacity, however there has been periodic localized flooding in major precipitation events.

Like most communities along the Wasatch Front, some of the biggest concerns involve sediment loads (coming primarily from disturbed sites), fertilizers and pesticides coming from lawns and farmlands, and oils and grease coming from the roadways, and improper disposal of household chemicals and waste materials. Kaysville City has several schools that have large impervious areas that can generate a lot of runoff and suspected larger than normal amounts of oil and/or grease. The downtown area has been well established for many years and contains large number of mature trees. Leaves coming from the trees create a minor problem during the Fall of the year. Kaysville's SWMP has been geared toward small city applications, targeting the pollutants mentioned.

Ongoing Documentation Process

Much of the documentation is or will be included in Appendix D. As part of this update, the existing BMPs and measureable goals have been reviewed and assessed for their effectiveness. We will complete evaluation worksheets to document our review and our assessment of the program. These evaluation sheets will be filed in Appendix D. This evaluation combined with new permit requirements provided the foundation for this update. We have tried to build off of the positive things that have been accomplished and renewed our commitment to improve in areas where our program has been lacking. We feel the revised program is more focused.

Our plan is to document our activities and to keep better track of what is happening within our community. We will continue to use the forms, logs, evaluation forms and backup information from the last major update. In the coming months we will focus attention on updating city standards to meet the new retention requirements.

SWMP Focus

As discussion was held trying to understand the nature of the problems and how to accomplish the mission statement, it was determined that the first thing that needs to be done is to educate the people. This program has been developed with a heavy emphasis on education and public involvement. It is anticipated that the effectiveness and participation levels in various programs will be greatly enhanced if the Public is first made aware of the problems we face.

The emphasis should be on the positive aspects of our community. Programs and education materials should give ideas of what people can do, and not give long lists of things they can't do.

PUBLIC EDUCATION AND OUTREACH

Permit Requirements

The permit requirements for Public Education and Outreach on Storm Water Impacts can be found in Section 4.2.1 of the permit. A copy of the permit is included in Appendix F for reference. The permit outlines in general the following requirements.

1. The MS4 must promote behavior change by the Public to reduce water quality impacts associated with pollutants in storm water runoff and illicit discharges. This is a multimedia approach targeted to specific audiences. The four audiences are: (1) residents, (2) businesses, institutions, and commercial facilities, (3) developers and contractors (construction), and (4) MS4 owned and operated facilities.
2. Target pollutants and pollutant sources and their potential impacts relating to storm water quality.
3. Provide and document information given to the four focus audiences.
4. Provide documentation or rationale as to why particular BMPs were chosen for its public education and outreach program.

Summary of the Four Focus Audiences

Residents (General Public)

The City considered how to disseminate information and educate its residents. The demographics range from young kids to the aged. The City feels that with today's technology, the city website has been used more often to advertise or inform the general public on public works projects and happenings within the city. The web address is www.kaysvillecity.com. A message board is also used on this website. Announcements and items of interest are posted periodically for the community. There is a specific link to storm water information under the Public Works Department webpage.

Another existing resource is the City bimonthly newsletter. A more focused effort to include an article or specific information that relates to storm water quality will aid the City in educating the general public without increasing their cost to send out such information. These newsletters are also posted on the website under "News". Kaysville City also mails out educational brochures annually to all residents with a pool or septic tank on their property to educate them on storm water BMP's associated with these systems.

The City makes annual visits to several elementary schools in Kaysville to educate students on Public Works and Storm Water. The City also actively participates in the Davis County Storm Water Coalition. Coalition efforts include 4th grade in classroom

storm water lessons, annual water fair, movie theater/television advertising, and a PSA program with Jr high/High School students.

Businesses, Institutions, and Commercial Facilities

Kaysville City has reviewed its local businesses and commercial facilities. They have evaluated opportunities or means to educate them on storm water items. The City does have a business park that is owned by each individual business. Kaysville has several institutions, mostly school facilities. The City will work closely with the responsible parties to ensure they are complying with storm water practices, BMPs, and maintaining their facilities. The City also mails out educational brochures annually to specific audiences including: fueling stations, automotive shops, mobile cleaners, landscaping, pools, and septic systems.

Developers and Contractors (Construction)

The City interacts with developers, engineers, and contractors when new developments come into the City as well as on Public Works projects. This focus audience is where the City would like to make efforts in educating since the most potential for storm water impacts is typically by construction activities. Just an increase in awareness and permitting may result in greater perceived benefits. Kaysville City has recently adopted an LID handbook to aid developers in understanding storm water quality requirements.

MS4 Industrial Facilities

The City facilities are spread out throughout the city, but the main Operations Center located on Old Mill Lane is where there is the most potential for storm water quality items. Below is a list of the MS4 owned and/or maintained facilities:

- Operations Center (721 W. Old Mill Lane)
- City Hall, Library, Police Station, Recreation Office (23 E. Center St.)
- Fire Station (175 S. Main St.)
- Kaysville Cemetery (500 E. Crestwood Dr.)
- Barnes Park (900 W. 200 North)
- Angel Street Park (200 S. Angel St.)
- Gailey Park (200 S. Larkin Ln.)
- Ponds Park (50 W. Burton Ln.)
- Hess Farms Park/Detention (600 E. 1625 South)
- DATC Detention Pond (550 S. Main St.)
- Pioneer Park (1285 S. Angel St.)

Target Pollutants and Pollutant Sources

Kaysville City has identified the following pollutants to target: fuels/oils, dirt/sediment, pesticides/fertilizers, pool chemicals, and soaps/detergents. These pollutants will be a focus however the City is mindful of other possible pollutants and will address them as needed.

Best Management Practices (BMPs)

In order to help meet the goals and objectives of this SWMP Kaysville City has chosen to adopt the following BMPs. Each BMP is cross referenced alphabetically by code in the indicated appendix to a fact sheet that describes the BMP, its applicability, its limitations, and its effectiveness. Only those BMPs listed below will be utilized by Kaysville City as part of their SWMP at the present time.

BMP	Code	Appendix
Classroom Education On Storm Water	CESW	B
Educational Materials	EM	B
Employee Training	ET	B
Public Education/ Participation	PEP	B
Using Media	UM	B

Goals

In order to more fully realize the benefit of the BMP the City has set the following goals. The goals set along with the existing efforts fulfill the requirements of the Final Storm Water Phase II Rule for Education and Outreach.

The following table includes the goals for MCM 1.

MCM	Target		Desired Result	Measurable Goal	Milestone Date	Associated BMPs	Measure of Success (Effectiveness)
	Pollutant(s)	Audience(s)					
1	Selected pollutants	Residents and Businesses	4.2.1.1 To educate audiences about impacts from storm water discharge	Continue supporting DCSWC TV ads & mailing brochures	Ongoing	PEP and UM	Ads continue to run, Brochures are sent out
1	Selected pollutants	Residents (4th graders)	4.2.1.1 To educate audiences on ways to avoid, minimize, and reduce impacts of storm water discharge	Continue storm water fair and school lessons	Annually	PEP and CESW	Fair and School Lesson occurs annually
1	Selected pollutants	Residents and Businesses	4.2.1.1 To educate audiences on actions individuals can take to improve water quality	Continue supporting TV ads & mailing brochures	Ongoing	PEP and UM	Ads continue to run and Brochures are sent out
1	See list in "desired result" column	General Public	4.2.1.2 – Provide and document information provided to target audience on prohibitions against illicit discharges and improper disposal of waste including, but not limited to: <ul style="list-style-type: none"> • maintenance of septic systems • effects of outdoor activities such as lawn care • benefits of on-site infiltration of storm water • effects of automotive work and car washing on water quality • proper disposal of swimming pool water • property management of pet waste 	Include information on the website and include information in utility bills or city newsletter. Continue mailing pollution prevention brochures annually.	Ongoing	PEP and UM	Information is current on website and included in utility bills or city newsletter. Brochures are mailed annually.

MCM	Target		Desired Result	Measurable Goal	Milestone Date	Associated BMPs	Measure of Success (Effectiveness)
	Pollutant(s)	Audience(s)					
1	See list in "desired result" column	Industrial, Commercial and Institutions	<p>4.2.1.3 – Provide and document information provided to target audience on prohibitions against illicit discharges and improper disposal of waste including, but not limited to:</p> <ul style="list-style-type: none"> • proper lawn maintenance • benefits of appropriate on-site infiltration of storm water • building and equipment maintenance • use of salt or other deicing materials • proper storage of materials • proper management of waste materials and dumpsters • proper management of parking lot surfaces 	Include information on the website and produce and distribute a brochure that is targeted to specific types of businesses.	Ongoing	PEP and UM	Information is current on website and included and brochures are distributed.
1	Illicit discharge and waste	Engineers, Contractors, Developers and plan review staff	4.2.1.4 Provide and document information provided to target audience regarding reduction of adverse impacts from storm water runoff from development sites	Distribute packets of information on SWPPP and BMP's that the contractor must read and sign.	Ongoing	EM	Information packets are signed for every new development.

MCM	Target		Desired Result	Measurable Goal	Milestone Date	Associated BMPs	Measure of Success (Effectiveness)
	Pollutant(s)	Audience(s)					
1	Illicit discharge and waste	Employees	4.2.1.5 - Provide and document information and training provided to target audience on prohibitions against illicit discharges and improper disposal of waste including, but not limited to: <ul style="list-style-type: none"> •equipment inspection to ensure timely maintenance •proper storage of industrial materials •proper management of waste materials, dumpsters and disposal sites •minimization of use of salt or other deicing materials •benefits of appropriate on-site infiltration •proper maintenance of parking lot surfaces 	Have training annually on illicit discharges.	Ongoing	ET	Training occurs annually (within 60 days for new hires) and is documented.
1	All pollutants	Permittee engineers, development and plan review staff, land use planners	4.2.1.6 – Provide and document information and training provided to target audience to learn about: <ul style="list-style-type: none"> • Low Impact Development (LID) practices • green infrastructure practices • post construction control and associated Best Management Practices (BMPs) 	Provide an annual training with all engineer, development and plan review staff, and land use planners to review the city's LID goals. Discuss what has been done in the past year to meet the goals, and define the upcoming year's goals.	Ongoing	ET	Annual meeting occurs and goals are documented.

MCM	Target		Desired Result	Measurable Goal	Milestone Date	Associated BMPs	Measure of Success (Effectiveness)
	Pollutant(s)	Audience(s)					
1	All pollutants	All Audiences	4.2.1.7 Evaluate the effectiveness of the public education program by a defined method.	Once every permit cycle (5 years) resurvey the community. Annually survey school district after water fair.	Once per permit cycle (community) Annually (Water fair participants)	PEP	Surveys complete and results compared to initial surveys.
1	All pollutants	All Audiences	4.2.1.8 Document why certain BMPs were chosen for public education program (over others)	Documentation provided in annual report and SWMP.	Ongoing	PEP	Rationale documented in SWMP and annual report.

PUBLIC PARTICIPATION/ INVOLVEMENT

Permit Requirements

The permit requirements for Public Participation and Involvement on Storm Water Impacts can be found in Section 4.2.2 of the permit. A copy of the permit is included in Appendix F for reference. The permit outlines in general the following requirements.

1. Comply with applicable State, and local public notice requirements to involve interest groups and stakeholders for their input on the SWMP.
2. Make available to the public a current version of the SWMP document for review and input for the life of the permit. This should be posted on the City's website. A specific contact person and phone number or email address shall be identified for those wishing to comment.
3. The SWMP shall include ongoing opportunities for public involvement and participation, but at a minimum two (2) times annually. Permittees can meet this requirement through advisory panels, public hearings, watershed committees, stewardship programs, environmental activities, volunteer opportunities, or other similar activities.

Summary of Existing Efforts

Website

The website will be used for disseminating and advertising several storm water related information. They will include, but not limited to, the following:

- SWMP will be posted on the website for public review and comment
- Hotline number
- A list or link where citizens can recycle different materials
- Advertising green waste collection
- A list or link where citizens can see potential projects volunteers could do, for example, Eagle Scout Projects.
- Helpful links for developing a SWPPP.
- A specific contact person and contact information will be added to the website
- Storm Water requirements/LID

Storm Drain Labeling Program

The City has labeled approximately 90% of the storm drain catch basins in the past. Volunteers have assisted in the implementation of labeling catch basins. Often times, fliers were distributed in the neighboring area to educate residents about the marker and to make them aware of storm water quality. The City will suspend labeling until there is a sufficient number of catch basins that need to be labeled due to the cost of labels and the best use of volunteer efforts.

Used Oil Recycling

There are several locations within the city boundaries where used oils can be brought for recycling. Information is found on the City's website.

Green Waste Collection

Once a year the City conducts a curbside pickup of yard waste to facilitate the proper disposal of such materials.

Service Groups/Volunteers

There are local scout and church groups that have participated in street and channel cleanup and litter reduction as well as distributing fliers and installing markers.

Best Management Practices (BMPs)

In order to help meet the goals and objectives of this SWMP Kaysville City has chosen to adopt the following BMPs for use within our city as applicable. Each BMP is cross referenced by code to a fact sheet that describes the BMP, its applicability, its limitations, and its effectiveness and can be found in the indicated appendix.

BMP	Code	Appendix
Public Education/ Participation	PEP	B

Goals

In order to more fully realize the benefit of the BMP the City has set the following goals. The goals set along with the existing efforts fulfill the requirements of the Final Storm Water Phase II Rule for Public Involvement and Participation.

The following table summarizes the goals for MCM 2.

MCM	Target		Desired Result	Measurable Goal	Milestone Date	Associated BMPs	Measure of Success (Effectiveness)
	Pollutant(s)	Audience(s)					
2	All pollutants	General public	4.2.2 Provide ongoing opportunities for Public Participation and Involvement but at a minimum of twice annually.	Notify and provide the public with involvement opportunities.	Twice Annually	PEP	Opportunities such as advisory panels, public hearings, watershed committees, stewardship programs, environmental activities, volunteer opportunities, etc. are provided at least twice annually.
2	All pollutants	General public	4.2.2.1 Have a program or policy in place that allows for the public to provide input	Notify the public of the city council meeting when SWMP updates will be reviewed.	Annually	PEP	The program or policy is in place
2	All pollutants	General public	4.2.2.2 Have SWMP document available for public review before it's submitted to the state	Have a hard copy of the draft of the permit available at the city offices within a week of the public hearing	Week before city council meeting	PEP	SWMP document is available for public review a week before public hearing
2	All pollutants	General public	4.2.2.3 Have SWMP document available to the public at all times	Post the SWMP on the website	Ongoing	PEP	SWMP is posted on the website
2	All pollutants	General public	4.2.2.3 Make updated SWMP document available to the public annually	Post updated SWMP annually	Annually	PEP	SWMP is updated and posted on the website annually

Kaysville City Storm Water Management Program

MCM 2-1

ILLICIT DISCHARGE DETECTION AND ELIMINATION

Permit Requirements

The permit requirements for Illicit Discharge Detection and Elimination on Storm Water Impacts can be found in Section 4.2.3 of the permit. A copy of the permit is included in Appendix F for reference. The permit outlines in general the following requirements.

1. Maintain a storm sewer system map of the MS4, showing the location of all outfalls and the names and location of all State waters that receive discharges from those outfalls.
2. Through an ordinance, or other regulatory mechanism, a prohibition (to the extent allowable under State, or local law) on non-storm water discharges into the MS4, and appropriate enforcement procedures and actions.
3. Develop and implement a plan to detect and address non-storm water discharges, including spills, illicit connections, and illegal dumping to the MS4. The plan should include:
 - a. Procedures for locating and listing priority areas likely to have illicit discharges
 - b. Annual field inspections of priority areas
 - c. Dry weather screening
 - d. Reporting of businesses that may require a separate industrial permit.
4. Develop and implement standard operating procedures (SOPs) for:
 - a. tracing the source of an illicit discharge.
 - b. characterizing the nature of, and the potential public or environmental threat posed by, any illicit discharges found or reported.
 - c. ceasing the illicit discharge, including notification of appropriate authorities, property owners, and technical assistance for removing the source and follow-up inspections.
5. Inform public employees, businesses, and the general public about the hazards associated with illegal discharges and improper disposal of waste.
6. Promote or provide services for the collection of household hazardous waste.
7. Publicly list and publicize a hotline or other local number for public reporting of spills and other illicit discharges.
8. Develop a written spill/dumping response procedure, and a flowchart for internal use, including various responsible agencies and their contacts.
9. Adopt and implement procedures for program evaluation and assessment.

10. Train employees, at a minimum, annually on the IDDE program.

Summary of Plan

Kaysville City's IDDE plan is to identify and eliminate illicit discharges in the storm drain system. The City has been reviewing and mapping their storm drain system in GIS for years. In the process of collecting data, routine cleaning of said facilities is completed. Through this process, the storm drain department assesses the status of the storm drain facility and can identify if an illicit discharge is present. Details on the IDDE program are found in Appendix C.

Mapping

The City has a fairly comprehensive, GPS based, storm drain map showing the storm drain system and its points of discharge. A copy of this map is included in Appendix G.

Ordinance

Kaysville City currently has an ordinance designed to specifically prohibit illicit discharges to the storm sewer system. The ordinance also give authority to Kaysville City to take escalating enforcement actions depending on the severity of an incident.

Illicit Spills

Reports of spills are handled by the Public Works Department, Fire Department or County Health Department. If a spill is reported or identified, the proper procedures will take place per the flowchart in the IDDE program.

Illicit Connections/Discharges

The City has not generally experienced problems with individuals or businesses illicitly connecting their sanitary waste water piping to storm drains. More common types of illicit discharges include natural runoff from sites with hazardous materials, spills from highway accidents, concrete truck washout water, residential yard waste and debris being washed into the gutters, and carpet cleaner waste.

Best Management Practices (BMPs)

In order to help meet the goals and objectives of this SWMP Kaysville City has chosen to adopt the following BMPs for use within our city as applicable. Each BMP is cross referenced by code to a fact sheet that describes the BMP, its applicability, its limitations, and its effectiveness and can be found in the indicated appendix.

BMP	Code	Appendix
Community Hotline	CH	B,C
Employee Training	ET	B,C
Hazardous Waste Management	HWM	B,C

Illegal Dumping Control	IDC	B,C
Identify Illicit Connections	IIC	B,C
Illegal Solids Dumping Controls	ISDC	B,C
Map Storm Water Drains	MSWD	B,C
Non-Storm Water Discharge to Drains	NSWD	B,C
Ordinance Development	OD	B,C
Public Education/ Participation	PEP	B,C
Used Oil Recycling	UOR	B,C

Goals

In order to more fully realize the benefit of the BMP the City has set the following goals. The goals set along with the existing efforts fulfill the requirements of the Final Storm Water Phase II Rule for Illicit Discharge Detection and Elimination.

The following table includes the goals for MCM 3.

MCM	Target		Desired Result	Measurable Goal	Milestone Date	Associated BMPs	Measure of Success (Effectiveness)
	Pollutant(s)	Audience(s)					
3	All Pollutants	Contractors, Developers, City Council	4.2.3 Enforcement ability for storm water rules	Review and update the ordinance to conform with permit	Within 180 days of permit renewal	OD	If ordinance is in place and meets the permit requirements
3	N/A	Public Works	4.2.3.1 – Maintain a current storm water map that includes: • Outfall locations with names and location of all State waters that receive discharge from these outfalls • Storm drain pipe and other structures	Maintain policy to maintain a Current SD System Map on all new developments within 12 months	Ongoing	MSWD	If policy is in place and meets the permit requirements
3	"	"	"	Continue to update mapping system per Kaysville policy	Ongoing	MSWD	If map is reviewed and updated
3	All Pollutants	All Audiences	4.2.3.2 – Effectively prohibit, through ordinance or other regulatory mechanism, non-SW discharges. Permittee must have a variety of escalating enforcement options to use.	Have ordinances and an escalating enforcement plan in place	Ongoing	NSWD	If ordinance and enforcement plan is in place and meets the permit requirements
3	"	"	4.2.3.2.1 The IDDE program must have adequate legal authority to detect, investigate, eliminate and enforce against non-SW discharges.	Provide adequate legal authority through ordinance	Ongoing	NSWD	If ordinance is in place and meets the permit requirements
3	All Pollutants	All Audiences	4.2.3.3 Implement written plan to detect and address NSWD to MS4.	Follow SOPS and written plan provided in SWMP.	Ongoing	NSWD	If SOPS are in place and documented
3	All Pollutants	All Audiences	4.2.3.3.1 Written SOPS for locating and listing areas likely to have illicit discharges.	Follow SOPS and Update priority area list Annually	Annually	NSWD	If SOPS are in place and priority list updated annually

MCM	Target		Desired Result	Measurable Goal	Milestone Date	Associated BMPs	Measure of Success (Effectiveness)
	Pollutant(s)	Audience(s)					
3	All Pollutants	All Audiences	4.2.3.3.2 Field inspections of areas which are considered a priority shall be achieved by inspecting each priority area annually	Conduct field inspections of IDDE priority areas annually	Annually	IDC, ISDC	Successful if reports are complete and filed
3	All Pollutants	All Audiences	4.2.3.3.3 Dry Weather Screening	Conduct dry weather screening annually and inspect all outfalls once permit cycle	Annually	NSWD	If 20% of outfalls are inspected annually and documented as defined in SOPS.
3	All Pollutants	All Audiences	4.2.3.3.4 Permittee must notify director within 30 days if they suspect a discharger may need coverage under separate UPDES permit.	Notify Director within 30 days	As needed	NSWD	If director is notified within 30 days
3	All Pollutants	Employees	4.2.3.4 - Implement SOPS for tracing the source of an illicit discharge.	Review flow chart and SOP with staff and provide training annually.	Annually	ET, IDC, IIC	Successful if training is completed annually and SOPS are followed.
3	All Pollutants	Employees	4.2.3.5 – Implement SOPS for characterizing the nature of any illicit discharges found or reported to the Permittee by the hotline developed in 4.2.3.9.	Review flow chart and SOP with staff and provide training annually.	Ongoing	IIC, CH, ET	Successful if training is completed annually and SOPS are followed.
3	All Pollutants	Employees	4.2.3.5.1 - Inspection report detail requirements.	Review inspection form and SOPS annually.	Ongoing	ET, IDC, ISDC	Successful if training is completed annually and SOPS are followed.
3	All Pollutants	All Audiences	4.2.3.6 – Implement SOPS for ceasing the illicit discharge. All IDDE investigations must be thoroughly documented and may be requested at any time by the Division.	Review flow chart and SOP with staff and provide training annually.	Ongoing	ET, IDC, ISDC	Successful if training is completed annually and SOPS are followed.
3	All Pollutants	Public Employees, Businesses and Residents	4.2.3.7 Inform public employees, businesses, and general public of hazards associated with illicit discharges and improper disposal of waste	See MCM 1		PEP, ET	See MCM 1

MCM	Target		Desired Result	Measurable Goal	Milestone Date	Associated BMPs	Measure of Success (Effectiveness)
	Pollutant(s)	Audience(s)					
3	Household Hazardous Waste	Residents	4.2.3.8 Promote or provide services for the collection of household hazardous waste	Put the Household Hazardous Waste disposal site address and phone number on City Website	Ongoing	UOR, HWM	Successful if posted on website.
3	Household Hazardous Waste	Residents	4.2.3.9 Publicly list and publicize a hotline or other telephone number for public reporting of spills and other illicit discharges	Post the hotline number on city website	Ongoing	CH	Successful if posted on website.
3	Household Hazardous Waste	Residents	4.2.3.9.1 - Develop written SOPS and flow chart for spill response from public referrals of illicit discharges.	Review flow chart and SOP with staff and provide training annually.	Annually	ET, IIC, IDC	Successful if training is completed annually and SOPS are followed.
3	All Pollutants	All Audiences	4.2.3.10 Adopt and implement procedures for program evaluation and assessment. Include a database for mapping, tracking of the spills or illicit discharges identified and inspections conducted	Maintain a database for tracking Illicit Discharges	Ongoing	IIC, MSWD	Successful if database is used and maintained.
3	All Pollutants	Staff, Contracted Staff or other responsible entities	4.2.3.11 Receive minimum annual training in the IDDE program. Immediate training for the new hires along with follow-up training as needed to address change. A summary of such training shall be included in the annual report.	Provide annual training of all City employees and contracted staff, including new hires.	Ongoing	ET	Successful if training is completed

CONSTRUCTION SITE RUNOFF CONTROL

Permit Requirements

The permit requirements for Construction Site Runoff Control on Storm Water Impacts can be found in Section 4.2.4 of the permit. A copy of the permit is included in Appendix F for reference. The permit outlines in general the following requirements

1. Have an ordinance or other regulatory mechanism requiring the implementation of proper erosion and sediment control practices on construction sites. This will include a requirement for a Storm Water Pollution Prevention Plan (SWPPP) and enforcement provisions.
 - a. Ensure construction operators obtain and maintain UPDES Construction Permit coverage for the duration of the project.
2. Develop a written enforcement strategy including
 - a. Standard Operating Procedures (SOPs) for enforcing processes and sanctions on construction sites with escalating enforcement.
 - b. Document and track all enforcement actions
 - c.
3. Develop and implement SOPs for preconstruction SWPPP review. Include the following:
 - a. A preconstruction conference to review plans and requirements
 - b. Procedures for consideration of potential water quality impacts using a checklist
 - c. Identifying priority construction sites
4. Develop and implement SOPs for construction site inspections and enforcement including:
 - a. Inspecting sites monthly
 - b. Inspecting all phases of construction
 - c. Procedures for Notice of Termination and final inspections
 - d. Inspecting priority areas every two weeks
 - e. Follow up on inspection action items
5. Train staff to implement the construction storm water program, including permitting, plan review, construction site inspections, and enforcement.
6. Establish procedures to maintain records of all projects disturbing greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development.

Summary of Existing Efforts

City Ordinances

The City currently has an ordinance that requires a storm water construction activity permit for construction activities. The application for this permit requires a completed Storm Water Pollution Prevention Plan (SWPPP).

Site Plan Review Process

The City currently has a procedure requiring the submittal of construction drawings prior to approving a new development. A SWPPP is required to address specifically water quality impacts.

Inspections

There is currently a Public Works inspector who oversees construction of new developments. There is also a storm water inspector to review and inspect the implementation of the SWPPP. Inspection forms and checklists are provided to the contractors and used by City personnel. BMPs are to be installed and maintained before, during and after construction.

Training

Inspectors and plan reviewers will be trained on the proper planning and installation of BMPs. They will also be trained on proper documentation and enforcement activities.

Records

Each applicable construction site will have its own storm water file maintained by the Public Works Department. There will be hard copies as well as electronic files stored for five (5) years per the General Permit requirements.

Best Management Practices (BMPs)

In order to help meet the goals and objectives of this SWMP Kaysville City has chosen to adopt the following BMPs for use within our city as applicable. Each BMP is cross referenced by code to a fact sheet that describes the BMP, its applicability, its limitations, and its effectiveness and can be found in the indicated appendix.

BMP	Code	Appendix
Certification and Inspector Training	CCIT	A,B
Classroom Education on Storm Water	CESW	A,B
Erosion Control Plan	ECP	A,B
Education Materials	EM	A,B
Housekeeping Practices	HP	A,B
Landscape and Irrigation Plan	LIP	A,B
Ordinance Development	OD	A,B
Zoning	ZO	A,B
Public Education & Participation	PEP	A,B

Goals

In order to more fully realize the benefit of the BMP the City has set the following goals. The goals set along with the existing efforts fulfill the requirements of the Final Storm Water Phase II Rule for Construction Site Runoff Control.

The following table includes the goals for MCM 4.

MCM	Target		Desired Result	Measurable Goal	Milestone	Assoc.	Measure of Success (Effectiveness)
	Pollutant(s)	Audience(s)			Date	BMP	
4	Sediment, Construction Site Debris, Hydrocarbons	Contractors and Developers	4.2.4.1 – Revise, as necessary, and enforce an ordinance or other regulatory mechanism that requires the use of erosion and sediment control at construction sites. Ordinance shall be equivalent with most current UPDES Storm Water General Permits for Construction, include sanctions, require contractors to implement a Storm Water Pollution Prevention Plan (SWPPP) and obtain permit coverage from UPDES, and provide access for MS4 to inspect BMPS on private property.	Require a SWPPP for every construction site over one acre or less than one acre if part of CPOD	Ongoing	OD	Successful if 95% of all active construction sites have a working SWPPP
4	Sediment, Construction Site Debris, Hydrocarbons	Contractors and Developers	4.2.4.2 – Develop a written enforcement strategy and implement the enforcement provisions of the ordinance or other regulatory mechanism.	Enforce ordinance through written escalating enforcement plan and maintain documentation	Ongoing	OD	Successful if completed
4	"	"	4.2.4.2 Documentation and tracking of all enforcement actions	Continue using construction site enforcement action log/database	Ongoing	OD	Successful if we have a log and are using it
4	Sediment, Construction Site Debris, Hydrocarbons	Contractors and Developers	4.2.4.3 Develop and implement SOP's for pre-construction SWPPP review for construction sites	Utilize a checklist for preconstruction reviews of SWPPP	Ongoing	ECP	Successful if we are conducting SWPPP reviews

MCM	Target		Desired Result	Measurable Goal	Milestone	Assoc.	Measure of Success (Effectiveness)
	Pollutant(s)	Audience(s)			Date	BMP	
4	"	"	4.2.4.3.1 – Conduct a pre-construction SWPPP review which includes: •Review of the site design •Review of the planned operations at the construction site •Review planned BMPs during the construction phase •Review planned BMPs to be used to manage runoff created after development	Hold Pre-con meetings on all sites greater than 1 acre	Ongoing	ECP	Successful if we are conducting Pre-con meetings
4	"	"	4.2.4.3.2 - The Permittee must develop procedures for receiving and considering information and Comments submitted by the public on proposed projects.	Allow for public comment on proposed projects through planning commission and city council meetings during development review process.	Ongoing	PEP	Public comments received during development review process.
4	"	"	4.2.4.3.2 – Identify priority construction sites considering the following factors at a minimum: •Soil erosion potential •Site slope •Project size and type •Sensitivity of and proximity to receiving waterbodies •Non-SW discharges and past record of noncompliance by the operators of the construction site	Develop a plan to identify priority areas based on recommended factors.	Ongoing	ZO	Successful if all priority sites are identified

MCM	Target		Desired Result	Measurable Goal	Milestone	Assoc.	Measure of Success (Effectiveness)
	Pollutant(s)	Audience(s)			Date	BMP	
4	Sediment, Construction Site Debris, Hydrocarbons	Contractors and Developers	4.2.4.4.1 Inspections of all new construction sites ... at least monthly by qualified personnel	Conduct monthly inspections of all construction sites - Emphasize self-inspections - sensitive areas to be inspected twice monthly	Ongoing	CCIT	Successful if all active construction sites are inspected monthly
4	"	Contractors, developers and MS4 staff	4.2.4.4.1 - "Qualified Person"	Develop policy that all SWPPP inspectors to be RSI trained	Ongoing	CCIT	Successful if completed
4	"	Contractors, developers and MS4 staff	4.2.4.4.2 ...The Permittee must inspect all phases of construction and include in its SWMP document a procedure for being notified by construction Operators/owners of their completion of active construction so that verification of final stabilization and removal of all temporary control measures may be conducted.	Develop SOPS for inspections prior to land disturbance, during active construction, and following active construction. Develop a written Notice of Termination process for use within the city	Ongoing	ECP	Successful if 95% of all active construction sites are inspected terminated appropriately
4	"	Contractors, developers and MS4 staff	"	Train SWPPP inspectors, their supervisors, and any personnel who grant final occupancy permits on the NOT process	Ongoing	ECP	Successful if 95% of all active construction sites are terminated appropriately
4	"	"	4.2.4.4.3 Conduct Bi-weekly inspections on high priority construction sites	Inspect high priority sites	Ongoing	ECP	Successful if all high priority sites are inspected bi-weekly

MCM	Target		Desired Result	Measurable Goal	Milestone	Assoc.	Measure of Success (Effectiveness)
	Pollutant(s)	Audience(s)			Date	BMP	
4	Sediment, Construction Site Debris	Contractors, developers and MS4 staff	4.2.4.4.5 - Follow up and enforcement actions must be taken, tracked, and documented (based on inspection findings).	Follow SOPS and Enforcement plan to ensure compliance	Ongoing	ECP	If enforcement action has been taken, tracked and documented as necessary
4	"	Contractors, developers and MS4 staff	4.2.4.5 Provide training to city staff and 3rd party designers	Develop policy that all SWPPP inspectors to be RSI trained	Ongoing	CCIT	Successful if completed
4	"	"	4.2.4.6 Maintain a record of all sites greater than one acre, including CPOD, for at least five years.	Maintain documentation	Ongoing	ECP	Successful if active construction sites documentation is recorded and saved

POST-CONSTRUCTION RUNOFF CONTROL

Permit Requirements

The permit requirements for Post-Construction Runoff Control on Storm Water Impacts can be found in Section 4.2.5 of the permit. A copy of the permit is included in Appendix F for reference. The permit outlines in general the following requirements

1. Have an ordinance or other regulatory mechanism requiring the implementation of long-term post-construction storm water controls at new and redevelopment sites.
2. Develop an enforcement strategy and implement enforcement provisions of the ordinance including escalating enforcement for recalcitrant violators.
3. Develop requirements or standards for new development and redevelopment projects to include storm water controls or management practices that will prevent or minimize impacts to water quality, including:
 - a. Non-structural BMPs
 - b. Structural BMPs that focus on Low Impact Development which encourages infiltration, evapotranspiration or harvesting.
 - c. If LID is not feasible document why and provide the rationale for alternative controls to be used
 - d. Develop a retrofit plan for existing developed sites that are adversely impacting water quality.
4. Define specific hydrologic method for calculating runoff and flow rates to be used to size structural BMPs and facilitate plan review. These methods shall include:
 - a. Requirements to prevent the off-site discharge of the precipitation from all rainfall events less than or equal to the 80th percentile rainfall event.
 - b. If retaining this event is infeasible, document why and provide alternative design criteria.
5. Adopt and implement procedures for site plan review which incorporate consideration of water quality impacts These procedures shall include:
 - a. Reviewing plans to ensure that they include long-term storm water management measures that meet the requirements
 - b. Providing developers and contractors with preferred design specifications to more effectively treat storm water
6. Develop, adopt and implement Standard Operating Procedures (SOPs) for site inspection and enforcement of post-construction storm water control measures. These procedures must ensure adequate ongoing long-term operation and maintenance by including:
 - a. A requirement for annual inspections of all long-term BMPs

- b. Maintenance agreements addressing maintenance requirements for any control measures
 - c. Allowing the MS4 to conduct oversight inspections
 - d. Inspection of long-term BMPs during construction to ensure they get constructed properly
- 7. Provide adequate training for staff concerning post-construction storm water management, plan review, inspections and enforcement.
- 8. Maintain an inventory of all post-construction structural storm water control measures. This includes public and private facilities.

Summary of Existing Efforts

Ordinance

The City currently has Ordinances and Standards in place to address post construction water quality concerns including peak discharge rates, detention, retention, LID, and maintenance agreements.

Low Impact Development

Working with JUB engineers, Kaysville City has recently developed an LID handbook to aid Developers and City Staff in understanding and implementing retention requirements. The handbook will be updated as needed to comply with changing requirements.

Landscaping Plans

Developers are required to present a plan outlining landscaping plans to the City for commercial or business sites. Open spaces or parks typically will also have landscaping plans submitted and are required to be landscaped before final approval.

Design Storm

Kaysville City has defined their design storm to be a 10-year, 1-hour storm, using the Farmer-Fletcher distribution. Detailed information is found in Appendix A.

Site Plan Review Process

The City currently has a procedure requiring the submittal of construction drawings prior to approving a new development. Water quality measures will be considered and assessed through the review process.

Training

Inspectors and plan reviewers will be trained on the proper planning and installation of post-construction BMPs and the procedures in the SOPs.

Inventory

The City has a fairly comprehensive, GPS based, storm drain map showing the storm drain system and its points of discharge. A copy of this map is included in Appendix G. The private storm drain control measures may or may not be included at this time. The

City plans to make an effort to continue to collect data per the requirements of this permit.

Best Management Practices (BMPs)

In order to help meet the goals and objectives of this SWMP Kaysville City has chosen to adopt the following BMPs for use within our city as applicable. Each BMP is cross referenced by code to a fact sheet that describes the BMP, its applicability, its limitations, and its effectiveness and can be found in the indicated appendix.

BMP	Code	Appendix
BMP Inspection and Maintenance	BMPIM	A,B
Educational Materials	EM	A,B
Infrastructure Planning	IPL	A,B
Landscape and Irrigation Plan	LIP	A,B
Ordinance Development	OD	A,B
Low Impact Development	LID	A,B

Goals

In order to more fully realize the benefit of the BMP the City has set the following goals. The goals set along with the existing efforts fulfill the requirements of the Final Storm Water Phase II Rule for Post Construction Runoff Control.

The following table includes the goals for MCM 5.

MCM	Target		Desired Result	Measurable Goal	Milestone	Assoc.	Measure of Success (Effectiveness)
	Pollutant(s)	Audience(s)			Date	BMP	
5	All Pollutants	MS4 Staff, Contractors and Developers	4.2.5.1 - Post Construction controls. Program must have Standards/requirements to prevent or minimize impacts to water quality.	Follow updated standards, ordinance, and LID handbook to meet requirement	Ongoing	OD	If standards, ordinance, and LID handbook are in place and followed
5	"	"	4.2.5.1.1 - Program should include nonstructural BMP requirements/standards that work to protect the integrity of natural resources and sensitive areas.	Follow updated standards and LID handbook that require assessment/use of non-structural BMPs for long term storm water management	Ongoing	OD/LID	If standards, ordinance, and LID handbook are in place and followed.
5	"	"	4.2.5.1.2 - Retention requirement - Develop and define a specific hydrologic method for calculating runoff volumes and flow rates to ensure consistent sizing of structural BMPS in jurisdiction and to facilitate plan review.	Follow updated standards and LID handbook that includes specific hydrologic calculation methods.	Ongoing	OD/LID	If standards, ordinance, and LID handbook are in place and followed.
5	"	"	4.2.5.1.2 - Retention requirement for new and redevelopment projects. (80th Percentile storm event)	Follow updated standards, ordinance, and LID handbook to meet requirement	Ongoing	OD/LID	If standards, ordinance, and LID handbook are in place and followed.

MCM	Target		Desired Result	Measurable Goal	Milestone	Assoc.	Measure of Success (Effectiveness)
	Pollutant(s)	Audience(s)			Date	BMP	
5	"	"	4.2.5.1.3 - LID Approach - Implement a process which requires the evaluation of LID for all projects subject to the requirements in 4.2.5.1.2	Follow updated standards, ordinance and LID handbook that includes requirements to retain the 80th percentile storm or approved alternative design criteria.	Ongoing	OD/LID	If standards, ordinance, and LID handbook are in place and followed.
5	"	"	4.2.5.1.4 - Feasibility- Provide rationale if meeting retention standards in part 4.2.5.1.2 is infeasible.	Follow updated standards, ordinance, and LID handbook that provide guidance for determining feasibility.	Ongoing	OD/LID	If standards, ordinance, and LID handbook are in place and followed.
5	All Pollutants	MS4 Staff, Contractors and Developers	4.2.5.2. Develop and adopt an ordinance or other regulatory mechanism that requires long-term post-construction storm water controls at new development and redevelopment sites.	Follow updated ordinance that meets requirements of permit	Ongoing	OD/IPL	If ordinance is in place and followed

MCM	Target		Desired Result	Measurable Goal	Milestone	Assoc.	Measure of Success (Effectiveness)
	Pollutant(s)	Audience(s)			Date	BMP	
5	"	"	4.2.5.2.1 - Include escalating enforcement provisions in ordinance to ensure compliance.	Ordinance in place	Ongoing	OD	If ordinance is in place and followed
5	"	"	<p>4.2.5.2.2 – Document how the requirements of the ordinance or other regulatory mechanism will protect water quality and reduce the discharge of pollutants to the MS4. Documentation shall include:</p> <ul style="list-style-type: none"> •How long-term storm water BMPs were selected •The pollutant removal expected from the selected BMPs •The technical basis which supports the performance claims for the selected BMPs 	<p>Updated Ordinance requires contractors and developers to submit documentation on: how long-term BMPs were selected,</p> <p>pollutant removal expected from the BMP, and technical basis supporting performance claims</p>	Ongoing	OD/IPL	If ordinance is in place and followed.

MCM	Target		Desired Result	Measurable Goal	Milestone	Assoc.	Measure of Success (Effectiveness)
	Pollutant(s)	Audience(s)			Date	BMP	
5	"	"	4.2.5.2.3 ... require private property owner/operators or qualified third parties to conduct maintenance and provide annual certification that adequate maintenance has been performed and the structural controls are operating as designed to protect water quality. In this case, the Permittee must require a maintenance agreement addressing maintenance requirements for any control measures installed on site.	Updated ordinances require maintenance agreements to be recorded with plat.	Ongoing	OD/BMIPM	If maintenance agreements are documented and recorded.
5	"	"	4.2.5.2.4 - Permanent structural BMPs shall be inspected at least once during installation by qualified personnel. Upon completion, the Permittee must verify that long-term BMPs were constructed as designed.	Conduct inspections as per the permit	Ongoing	BMPIM	Inspections are conducted and documented
5	"	"	4.2.5.2.5 - Inspections and any necessary maintenance must be conducted at least every other year by either the Permittee	Conduct inspections as per the permit	Ongoing	BMPIM	Inspections are conducted and documented

MCM	Target		Desired Result	Measurable Goal	Milestone	Assoc.	Measure of Success (Effectiveness)
	Pollutant(s)	Audience(s)			Date	BMP	
5	"	"	4.2.5.3.1 - Adopt and implement procedures for site plan review that evaluate water quality impacts.	Follow SOPS and Conduct site plan reviews which evaluate water quality	Ongoing	IPL	If reviews are conducted
5	"	"	4.2.5.3.2 - Review post construction plans for all new and redevelopment projects.	Follow SOPS and Conduct site plan reviews for post construction plans per permit requirements	Ongoing	IPL	If reviews are conducted
5	"	"	4.2.5.4 - Maintain an inventory of post construction structural storm water Control measures including - Description, maintenance requirements, inspection information.	Maintain and update Inventory log annually	Ongoing	BMPIM	If log is maintained and updated
5	"	MS4 Staff	4.2.5.5 Permittees shall provide adequate training for all staff involved in post-construction storm water Management, planning and review, and inspections and enforcement.	Schedule and conduct training for appropriate personnel	Annually	BMPIM	If all appropriate personnel are trained

POLLUTION PREVENTION / GOOD HOUSEKEEPING

Permit Requirements

The permit requirements for Pollution Prevention and Good Housekeeping on Storm Water Impacts can be found in Section 4.2.6 of the permit. A copy of the permit is included in Appendix F for reference. The permit outlines in general the following requirements

1. Develop and implement an operation and maintenance program for City-owned or operated facilities.
2. Maintain an inventory of City-owned or operated facilities and storm water controls. Assess said list for their potential to discharge typical urban pollutants to the storm water system.
3. Identify 'high-priority' facilities or operations that have a high potential to generate storm water pollutants. Included with Standard Operating Procedures (SOPs) specific to municipal operations. The SOPs shall include appropriate pollution prevention and good housekeeping procedures for all of the following types of facilities and/or activities listed below:
 - a. Buildings and facilities
 - b. Material storage areas, heavy equipment storage areas and maintenance areas
 - c. Parks and open spaces
 - d. Vehicle and equipment
 - e. Roads, highways, and parking lots
 - f. Storm water collection and conveyance system
 - g. Other facilities and operations (those not listed, but would reasonably be expected to discharge contaminated runoff)
4. Develop and implement a SWPPP for all "high priority" facilities
5. Conduct inspections of "high priority" facilities
 - a. Weekly visual inspections
 - b. Quarterly comprehensive inspections
 - c. Quarterly visual observation of storm water discharges
6. Develop and implement SOPs for the following types of facilities and/or activities
 - a. Buildings and facilities
 - b. Material and equipment storage areas
 - c. Parks and open space
 - d. Vehicles and equipment
 - e. Roads, highways and parking lots
 - f. Storm water collection and conveyance systems
 - g. Other facilities and operations

7. If a third-party is to conduct municipal maintenance or private developments conduct their own maintenance, the contractor shall be held to the same standard as the City. This should be outlined and defined in contracts.
8. Inspection schedules and logs should be part of the O&M program.
9. Develop and implement a process to assess the water quality impacts in the design of all new flood management structural controls that are associated with the MS4.
10. City construction projects shall comply with the requirements applied to private projects.
11. Include annual employee training on how to incorporate pollution prevention and good housekeeping techniques into municipal operations, including SOPs.

Summary of Existing Efforts

Inventory

The City has a fairly comprehensive, GPS based, storm drain map showing the storm drain system and its points of discharge. A copy of this map is included in Appendix G. The City-owned and operated facilities are also identified in the GIS. Detail maps of the facilities are included in Appendix G.

Storm Drain Maintenance Program

The City currently maintains inlet boxes and other MS4 improvements systematically as well as on an as-needed basis. Streets are also swept systematically and as-needed. Records and schedules will be documented routinely. Standard Operating Procedures (SOPs) for said maintenance procedures are located in Appendix B. If a third-party plans to maintain a facility, an operation and maintenance agreement will be executed. A copy of said agreement will be developed and then made part of this SWMP in Appendix A.

Inspections

The storm water inspector will inspect and review priority sites with proper checklists following the developed SOP. Documentation will accompany said inspections.

Public Construction Projects

Storm water control measures and BMPs will be implemented on MS4 projects per the General Permit requirements and guidelines. Proper documentation and inspections will be recorded for public construction projects.

Best Management Practices (BMPs)

In order to help meet the goals and objectives of this SWMP Kaysville City has chosen to adopt the following BMPs for use within our city as applicable. Each BMP is cross

referenced by code to a fact sheet that describes the BMP, its applicability, its limitations, and its effectiveness and can be found in the indicated appendix.

BMP	Code	Appendix
Employee Training	ET	A,B
Housekeeping Practices	HP	A,B
Infrastructure Planning	IPL	A,B

Goals

In order to more fully realize the benefit of the BMP the City has set the following goals. The goals set along with the existing efforts fulfill the requirements of the Final Storm Water Phase II Rule for Pollution Prevention/Good Housekeeping.

The following table includes the goals for MCM 6.

MCM	Target		Desired Result	Measurable Goal	Milestone	Assoc.	Measure of Success (Effectiveness)
	Pollutant(s)	Audience(s)			Date	BMP	
6	All pollutants	MS4 Staff	4.2.6.1. Permittees shall develop and keep current a written inventory of Permittee-owned or operated facilities	Complete listing of MS4 owned/operated facilities	Ongoing	HP	If list is completed and updated
6	All pollutants	MS4 Staff	4.2.6.2 All Permittees shall assess the written inventory of Permittee-owned or operated facilities and make a list of common pollutants that may originate from these facilities and how to prevent them from entering the storm water system	Assess pollution potential using facilities evaluation form	ongoing	HP	If form is used as described
6	All pollutants	MS4 Staff	4.2.6.3 Based on the assessment required in Part 4.2.6.2., the Permittee must identify as “high-priority” those facilities or operations that have high potential for storm water pollution	Identify high priority sites using facilities evaluation form	Ongoing	HP	If high priority sites are properly identified
6	All pollutants	MS4 Staff	4.2.6.4 Permittee shall prepare and implement a SWPPP for all high priority areas	Implement a SWPPP for all high priority sites	Ongoing	HP	If SWPPP is in place
	"	"	4.2.6.5.1 Monthly visual inspections: The Permittee must perform monthly visual inspections of “high priority” facilities in accordance with the developed SOPs to minimize the potential for pollutant discharge.	Conduct monthly inspections	Ongoing	HP	If at annual review all monthly inspections are logged and reports completed

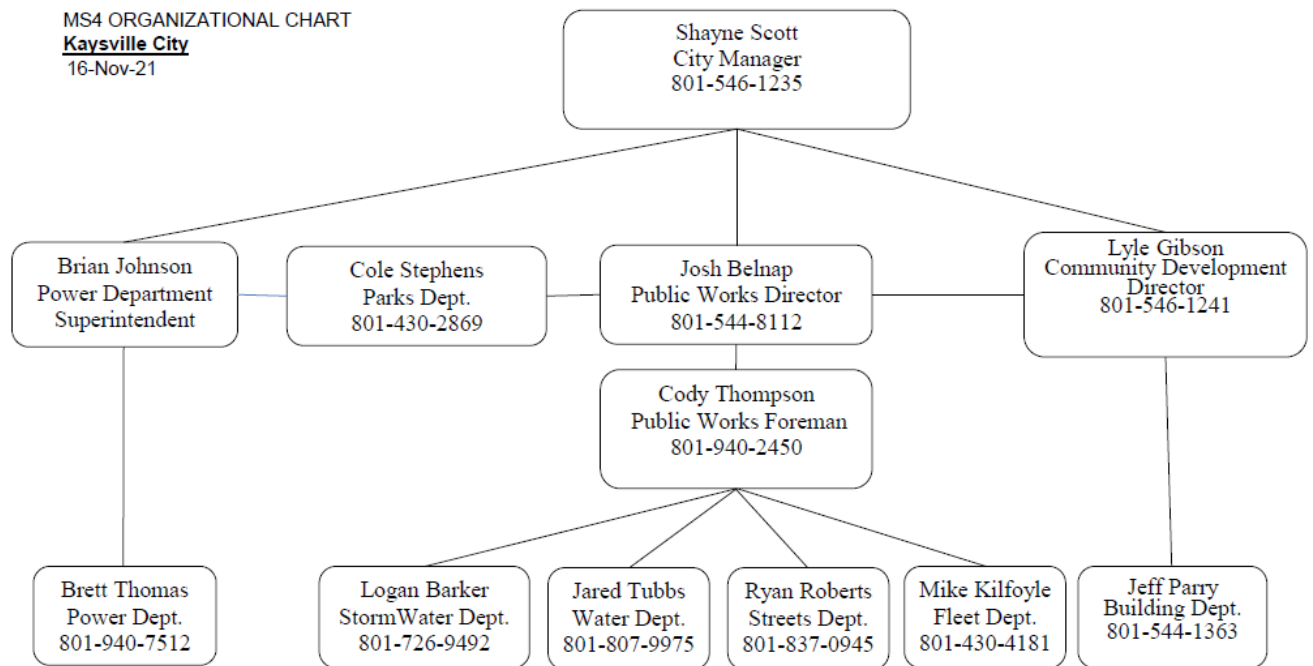
MCM	Target		Desired Result	Measurable Goal	Milestone	Assoc.	Measure of Success (Effectiveness)
	Pollutant(s)	Audience(s)			Date	BMP	
	"	"	4.2.6.5.2 Semi-Annual comprehensive inspections: At least twice per year, a comprehensive inspection of "high priority" facilities, including all storm water controls, must be performed	Conduct semi-annual comprehensive inspections	Ongoing	HP	If at annual review all semiannual inspections are logged and reports completed
6	"	"	4.2.6.5.3 Annual visual observation of storm water discharges: At least once per year, the Permittee must visually observe the quality of the storm water discharges from the "high priority" facilities	Conduct annual visual observations of storm water discharges at high priority facilities	Ongoing	HP	If at annual review all annual visual monitoring is completed and logged and reports completed
6	All pollutants	MS4 Staff	4.2.6.6 Permittees shall develop and implement SOPs to protect water quality at each of the facilities owned or operated by the Permittee and/or activities conducted by the Permittee including maintenance schedules	Develop and implement SOPS as described in permit parts 4.2.6.6	Ongoing	HP	If SOPS are in place and followed
6	All pollutants	MS4 Staff	4.2.6.6.3 Permittees must ensure and document proper disposal methods of all waste and wastewater removed during cleaning and maintenance of the storm water conveyance system	Develop and implement SOPS as described in permit parts 4.2.6.6.3	Ongoing	HP	If SOPS are in place and followed

MCM	Target		Desired Result	Measurable Goal	Milestone	Assoc.	Measure of Success (Effectiveness)
	Pollutant(s)	Audience(s)			Date	BMP	
6	All pollutants	MS4 Staff	4.2.6.6.4 Permittees must ensure that vehicle, equipment and other wash waters are not discharged to the MS4 or waters of the state	Develop and Implement SOPS as described in permit part 4.2.6.6.4	Ongoing	HP	If SOPS are in place and followed
6	All pollutants	MS4 Staff	4.2.6.6.5 The Permittee shall develop a spill prevention plan in coordination with the local fire department.	Review current Spill Prevention plan with Fire Chief and update as necessary	Ongoing	HP	If plan is reviewed and updated annually
6	All pollutants	MS4 Staff	4.2.6.6.6 Permittees must maintain an inventory of all floor drains inside all Permittee owned or operated buildings. The inventory shall be kept current. The Permittee shall ensure that all floor drains discharge to appropriate locations.	Dye test all floor drains to ensure proper discharge to sewer and maintain inventory	Ongoing	HP	If inventory is maintained and updated annually

MCM	Target		Desired Result	Measurable Goal	Milestone	Assoc.	Measure of Success (Effectiveness)
	Pollutant(s)	Audience(s)			Date	BMP	
6	All pollutants	MS4 Contractors	4.2.6.7. The Permittee shall be responsible for ensuring, through contractually-required documentation and/or periodic site visits that contractors performing O&M activities for the Permittee are using appropriate storm water controls and following the SOPS, storm water control measures, and good housekeeping practices of the Permittee	Provide appropriate training for all city contractors	Ongoing	HP	If all city contractors are trained and following prescribed procedures
6	"	MS4 Staff, Contractors and Developers	4.2.6.8. The Permittee must develop and implement a process to assess the water quality impacts in the design of all new flood management structural controls that are associated with the Permittee or that discharge to the MS4.	Enforce a policy/process to assess water quality impacts on all new flood control projects	Ongoing	IPL	If water quality is being considered on all new flood management structural controls
6	All pollutants	MS4 Staff	4.2.6.9. The Permittee must develop a plan to retrofit existing developed sites that the Permittee owns or operates that are adversely impacting water quality	Annually assess city facilities and their impact on water quality. Use LID manual as guidance for retrofit projects	Ongoing	IPL	If annual review is completed

MCM	Target		Desired Result	Measurable Goal	Milestone	Assoc.	Measure of Success (Effectiveness)
	Pollutant(s)	Audience(s)			Date	BMP	
6	"	MS4 staff	4.2.6.10. Permittees shall provide training for all employees who have primary construction, operation, or maintenance job functions that are likely to impact storm water quality.	See individual training goals within other MCMs			
6	"	"	"	Conduct ongoing training according to schedule	Ongoing	ET, HP	If training is completed and documented according to schedule at annual evaluation

Kaysville City Organizational Chart



Kaysville City Department Responsibilities

City Manager

- Liaison with City Council and Planning Commission
- Coordination with all City Directors/Departments

Public Works Director

- Liaison with Administration and City Council
- Coordination with Department Heads
- General oversight of Storm Water Management Program (SWMP)

Asst. Public Works Director/Foreman

- Liaison with Administration and City Council
- Coordination with Department Heads
- Implementation/management of Storm Water Management Program (SWMP)
- Compile annual report
- Oversight on shared facilities and work areas

Public Works Secretary

- Assist in implementation and management of Storm Water Management Program (SWMP)
- Assist in maintaining and updating SWMP (documentation)
- Assist in compiling the annual report
- Assist in coordination with Department Heads

Storm Drain Department

- SWMP implementation including inspections, enforcement, and documentation
- Keep inlets clean and operating
- Maintain drainage areas in the public works facility
- Maintain public and private parking lots
- Maintain BMPs (Detention Basins, Catch Basins, etc.)
- Assist in compiling the annual report
- Assist in maintaining and updating SWMP

Streets Department Head

- Streets department maintenance work area
- Streets department equipment operation
- Equipment maintenance for streets department
- Training streets department personnel
- Chemicals storage in work area
- Snow plowing program
- Street sweeping program

Parks Department Head

- Parks department maintenance work area
- Pesticide, Herbicide, and Fertilizer (PHF) program
- Training parks department personnel
- Chemical storage in work area
- Parks department equipment operation
- Parks department equipment maintenance
- Mowing program

Water Department Head

- Water department maintenance work area
- Training water department personnel
- Chemical storage in work area
- Water department equipment operation
- Equipment maintenance for water department equipment

Fleet Department Head

- Fleet department maintenance work area
- Training fleet department personnel
- Chemicals, fluids, and oils in work area
- Metal fabrication area

Power Department Head

- Power department maintenance work area
- Training Power department personnel
- Chemicals, fluids, and oils in work area
- Maintain electrical equipment storage areas

Community Development Director/City Engineer

- Oversight of Building and Community Development departments
- Training Building and Community Development department personnel
- Development plan review and approval process
- Development review and City fees

JUSTIFICATION FOR CHANGES

Updating Storm Water Management Program: Updates to the Storm Water Management Program must be done in accordance with Section 4.4 of the MS4 Permit.

During this current review of our SWMP plan, several BMPs have been updated/added to meet new permit requirements and changes. No BMPs have been removed or replaced due to ineffectiveness.

The most significant changes to our SWMP have been a result of our efforts to implement LID/Retention requirements in Kaysville City. With the help of JUB Engineers, we have developed an LID handbook to provide guidance to city staff and developers. Ordinances have been revised and adopted to meet LID/Retention permit requirements. Training of city staff has been ongoing, and we will continue to update our Supplemental Guide to Storm Water Management for Developers as we adapt to these changes.

Certification and Signature. (6.8.3) (by Principal Executive Officer or Ranking Elected Official)

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Kaysville City MS4 Name

Josh Belnap
Print name



Signature

November 19, 2021
Date

BMP: BMP Inspection and Maintenance

BMPIM



APPLICATIONS

- ☐ Manufacturing
- ☒ Material Handling
- ☒ Vehicle Maintenance
- ☐ Construction
- ☐ Commercial Activities
- ☐ Roadways
- ☒ Waste Containment
- ☒ Housekeeping Practices

DESCRIPTION:

Inspect and maintain all structural BMP's (both existing and new) on a routine basis to remove pollutants from entering storm drain inlets. This includes the establishment of a schedule for inspections and maintenance.

APPROACH:

Regular maintenance of all structural BMP's is necessary to ensure their proper functionality.

- Annual inspections.
- Prioritize maintenance to clean, maintain, and repair or replace structures in areas beginning with the highest pollutant loading.
- Clean structural BMP's in high pollutant areas just before the wet season to remove sediments and debris accumulated during the summer and fall.
- Keep accurate logs of what structures were maintained and when they were maintained.
- Record the amount of waste collected.

LIMITATIONS:

- Cost
- Availability of trained staff



TARGETED POLLUTANTS


- ☒ Sediment
- ☒ Nutrients
- ☐ Heavy Metals
- ☒ Toxic Materials
- ☐ Oxygen Demanding Substances
- ☒ Oil & Grease
- ☒ Floatable Materials
- ☐ Bacteria & Viruses

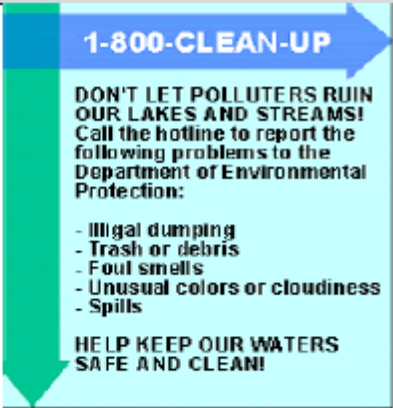
- ☒ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

IMPLEMENTATION REQUIREMENTS

- ☒ Capital Costs
- ☒ O&M Costs
- ☒ Maintenance
- ☒ Staffing
- ☐ Training
- ☐ Administrative

- ☒ High
- ☒ Medium
- ☐ Low

BMP: Classroom Education On Storm Water	CESW
	<p style="text-align: center;">APPLICATIONS</p> <p> <input type="checkbox"/> Manufacturing <input checked="" type="checkbox"/> Material Handling <input type="checkbox"/> Vehicle Maintenance <input type="checkbox"/> Construction <input type="checkbox"/> Commercial Activities <input type="checkbox"/> Roadways <input checked="" type="checkbox"/> Waste Containment <input checked="" type="checkbox"/> Housekeeping Practices </p>
<p>DESCRIPTION: Classroom education is an integral part of any storm water pollution outreach program. Providing storm water education through schools exposes the message not only to students but to their parents as well. Topics can include Water conservation, proper lawn and garden care, and proper disposal of hazardous household wastes.</p> <p>APPROACH:</p> <ul style="list-style-type: none"> ➤ Building a strong relationship with the school district is the most important step in getting storm water education into the schools. ➤ When developing an outreach message for children, choose the age ranges to target. ➤ Many additional classroom materials are available for use free of cost. Educational materials available for downloading from the Internet at www.csu.org/water/watereducation/watereducation.html. ➤ Should make students aware of the potential impacts of hazardous household materials on water quality and inform residents of ways to properly store, handle, and dispose of the chemicals. ➤ Water usage in the home can easily be reduced by 15 to 20 percent—without major discomfort—by implementing a program to conserve water in the home. ➤ Lawn and garden activities can result in contamination of storm water through pesticide, soil, and fertilizer runoff. Proper landscape management, however, can effectively reduce water use and contaminant runoff and enhance the aesthetics of a property. <p>LIMITATIONS:</p> <ul style="list-style-type: none"> ➤ One of the limitations of classroom education is being able to incorporate storm water issues into the school curricula. With so many subjects to teach, environmental issues might be viewed as less important. <p>MAINTENANCE:</p> <ul style="list-style-type: none"> ➤ Programs and educational materials can be re-used, but they must be presented on a continual basis. 	<p style="text-align: center;">TARGETED POLLUTANTS</p> <p> <input checked="" type="checkbox"/> Sediment <input checked="" type="checkbox"/> Nutrients <input checked="" type="checkbox"/> Heavy Metals <input checked="" type="checkbox"/> Toxic Materials <input checked="" type="checkbox"/> Oxygen Demanding Substances <input checked="" type="checkbox"/> Oil & Grease <input checked="" type="checkbox"/> Floatable Materials <input checked="" type="checkbox"/> Bacteria & Viruses </p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <input checked="" type="checkbox"/> High Impact <input checked="" type="checkbox"/> Medium Impact <input type="checkbox"/> Low or Unknown Impact </div> <p style="text-align: center; margin-top: 20px;">IMPLEMENTATION REQUIREMENTS</p> <p> <input checked="" type="checkbox"/> Capital Costs <input type="checkbox"/> O&M Costs <input type="checkbox"/> Maintenance <input type="checkbox"/> Training </p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <input type="checkbox"/> High <input checked="" type="checkbox"/> Medium <input type="checkbox"/> Low </div>

BMP: Community Hotlines	CH
	<p style="text-align: center;">APPLICATIONS</p> <ul style="list-style-type: none"> ■ Manufacturing ■ Material Handling ■ Vehicle Maintenance ■ Construction ■ Commercial Activities <input checked="" type="checkbox"/> Roadways <input checked="" type="checkbox"/> Waste Containment ■ Housekeeping Practices
<p>DESCRIPTION: Because regulators and authorities cannot monitor all water bodies at once, they sometimes rely on the public to keep them informed of water polluters. Community hotlines provide a means for concerned citizens and agencies to contact the appropriate authority when they see water quality problems.</p> <p>APPROACH:</p> <ul style="list-style-type: none"> ➤ Once a city has determined that they need a hotline, they should choose between a telephone or an e-mail hotline. ➤ A party or agency responsible for maintaining the hotline and responding to incoming complaints must first be identified. The responsible party could be a division of local government, a water quality board, a public utility, or an environmental agency. ➤ All distributed materials should include pollution hotline numbers and information. ➤ Curbs should have pumping systems, instead of drainage systems, for collecting spilled materials. ➤ Generally, an investigation team promptly responds to a hotline call and, in most cases, visits the problem site. ➤ If a responsible party can be identified, the team informs the party of the problem, offers alternatives for future disposal, and instructs the party to resolve the problem. <p>LIMITATIONS:</p> <ul style="list-style-type: none"> ➤ The community's ability to pay for it. ➤ The ability of the community to keep the hotline staffed. <p>MAINTENANCE:</p> <ul style="list-style-type: none"> ➤ The most important part is the responsiveness of the hotline. If a citizen reports an illegal dumping but no action is taken by the appropriate authority, that citizen could lose faith in the hotline and might not call back with future information. 	<p style="text-align: center;">TARGETED POLLUTANTS</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Sediment <input checked="" type="checkbox"/> Nutrients ■ Heavy Metals ■ Toxic Materials <input checked="" type="checkbox"/> Oxygen Demanding Substances ■ Oil & Grease ■ Floatable Materials <input checked="" type="checkbox"/> Bacteria & Viruses <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <ul style="list-style-type: none"> ■ High Impact <input checked="" type="checkbox"/> Medium Impact <input type="checkbox"/> Low or Unknown Impact </div> <p style="text-align: center;">IMPLEMENTATION REQUIREMENTS</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Capital Costs <input checked="" type="checkbox"/> O&M Costs <input checked="" type="checkbox"/> Maintenance <input type="checkbox"/> Training <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <ul style="list-style-type: none"> ■ High <input checked="" type="checkbox"/> Medium <input type="checkbox"/> Low </div>

BMP: Contractor Certification & Inspector Training

CCIT



Municipalities can establish training programs to educate contractors about erosion and sediment control practices



Construction reviewers periodically inspect construction sites to ensure that contractors have installed and maintained their erosion and sediment controls properly (Source: University of Connecticut Cooperative Extension System, 2000)

APPLICATIONS

- ☐ Manufacturing
- ☒ Material Handling
- ☐ Vehicle Maintenance
- ☒ Construction
- ☐ Commercial Activities
- ☐ Roadways
- ☒ Waste Containment
- ☐ Housekeeping Practices

DESCRIPTION:

One of the most important factors determining whether or not erosion and sediment controls will be properly installed and maintained on a construction site is the knowledge and experience of the contractor. Many communities require certification for key on-site employees who are responsible for implementing the ESC plan. Several states have contractor certification programs. The State of Delaware requires that at least one person on any construction project be formally certified. The Delaware program requires certification for any foreman or superintendent who is in charge of onsite clearing and land-disturbing activities for sediment and runoff control associated with a construction project.

APPROACH:

- Training and certification will help to ensure that the plans are properly implemented and that best management practices are properly installed and maintained.
- Inspector training programs are appropriate for municipalities with limited funding and resources for ESC program implementation.
- Contractor certification can be accomplished through municipally sponsored training courses, or more informally, municipalities can hold mandatory pre-construction or pre-wintering meetings and conduct regular and final inspection visits to transfer information to contractors (Brown and Caraco, 1997).
- To implement an inspector training program, the governing agency would need to establish a certification course with periodic recertification, review reports submitted by private inspectors, conduct spot checks for accuracy, and institute fines or other penalties for noncompliance.
- Curb systems should be maintained through curb repair (patching and replacement).
- To minimize the amount of spilled material tracked outside of the area by personnel, grade within the curbing to direct the spilled materials to a down-slope side of the curbing, thus keeping the spilled materials away from personnel and equipment. Grading will also facilitate clean-up.

LIMITATIONS:

- Contractor certification and inspector training programs require a substantial amount of effort on the part of the municipality or regulatory agency.
- They need to develop curricula for training courses, dedicate staff to teach courses, and maintain a report review and site inspection staff to ensure that both contractors and inspectors are fulfilling their obligations and complying with the ESC program.

TARGETED POLLUTANTS



- Sediment
- Nutrients
 - ☐ Heavy Metals
- Toxic Materials
- ☐ Oxygen Demanding Substances
- Oil & Grease
- Floatable Materials
- ☐ Bacteria & Viruses

- High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

IMPLEMENTATION REQUIREMENTS

- Capital Costs
- O&M Costs
- ☒ Maintenance
- ☐ Training

- High
- ☒ Medium
- ☐ Low

BMP: Illegal Dumping Controls	IDC
	<p data-bbox="1105 422 1295 443">PROGRAM ELEMENTS</p> <ul style="list-style-type: none"> 9 New Development 9 Residential 9 Commercial Activities 9 Industrial Activities 9 Municipal Facilities : Illegal Discharges <div data-bbox="1068 663 1333 825">  </div> <p data-bbox="1097 936 1304 957">TARGETED POLLUTANTS</p> <ul style="list-style-type: none"> : Sediment 9 Nutrients : Heavy Metals ▲ Toxic Materials ▲ Oxygen Demanding Substances ▲ Oil & Grease ▲ Floatable Materials : Bacteria & Viruses <div data-bbox="1019 1205 1383 1283" style="border: 1px solid black; padding: 5px;"> <p> <input type="checkbox"/> High Impact <input checked="" type="checkbox"/> Medium Impact <input type="checkbox"/> Low or Unknown Impact </p> </div> <p data-bbox="1053 1377 1349 1398">IMPLEMENTATION REQUIREMENTS</p> <ul style="list-style-type: none"> 9 Capital Costs : O&M Costs 9 Regulatory ▲ Training : Staffing 9 Administrative <div data-bbox="1019 1677 1383 1703" style="border: 1px solid black; padding: 5px;"> <p> <input type="checkbox"/> High <input checked="" type="checkbox"/> Medium <input type="checkbox"/> Low </p> </div>
<p data-bbox="228 695 370 716">DESCRIPTION:</p> <p>Implement measures to detect, correct, and enforce against illegal dumping of pollutants on streets, into the storm drain system, and into creeks. Substances illegally dumped on streets, into the storm drain system, and into creeks includes paints, used oil and other automotive fluids, construction debris, chemicals, fresh concrete, leaves, grass clippings, and pet wastes. All of these wastes can cause storm water and receiving water quality problems as well as clog the storm drain system.</p> <p data-bbox="228 930 354 951">APPROACH:</p> <p>One of the keys to success is increasing the general public's awareness of the problem and to at least identify the incident, if not correct it. There are a number of ways of accomplishing this:</p> <ul style="list-style-type: none"> < Train municipal staff from all departments to recognize and report incidents. < Deputize municipal staff who may come into contact with illegal dumping with the authority to write illegal dumping tickets for offenders caught in the act. < Educate the public. < Provide the public with a mechanism for reporting such as a hot line. <p>Establish system for tracking incidents which will identify:</p> <ul style="list-style-type: none"> < Illegal dumping "hot spots", < Types and quantities (in some cases) of wastes, < Patterns in time of occurrence (time of day/night, month, or year), < Mode of dumping (abandoned containers, "midnight dumping" from moving vehicles, direct dumping of materials, accident/spills), and < Responsible parties. <p>A tracking system also helps manage the program by indicating trends, and identifying who, what, when, and where efforts should be concentrated.</p> <p data-bbox="228 1507 354 1528">LIMITATIONS</p> <p>The elimination of illegal dumping is dependent on the availability, convenience, and cost of alternative means of disposal.</p>	

BMP: Educational Materials

EM



DESCRIPTION:

Educational Materials to present information to the public on storm water issues and water quality awareness is an integral part of any storm water education program. Providing storm water education by sending out information with bills, newsletters, or presented at city activities, in city offices, schools, and fair booths, exposes the message to a wide variety of people, if not city-wide. Topics can include Water conservation, proper lawn and garden care, and proper disposal of hazardous household wastes. Many educational materials can be used for city personnel, contractors as well as homeowners or businesses.

APPROACH:

- Building a strong relationship with citizens is the most important step in getting storm water education city-wide.
- Educational materials can be tailored to all different age groups and technical background.
- Should make people aware of the potential impacts of hazardous household materials on water quality and inform residents of ways to properly store, handle, and dispose of the chemicals
- Water usage in the home can easily be reduced by 15 to 20 percent—without major discomfort—by implementing a program to conserve water in the home.
- Lawn and garden activities can result in contamination of storm water through pesticide, soil, and fertilizer runoff. Proper landscape management, however, can effectively reduce water use and contaminant runoff and enhance the aesthetics of a property.

LIMITATIONS:

- Not everyone will actually read or incorporate the information into their lives.
- Budgets need to have sufficient funds to obtain educational materials and their distribution.

MAINTENANCE:

- Programs and educational materials can be re-used, but they must be presented on a continual basis.

APPLICATIONS

- ☒ Manufacturing
- ☒ Material Handling
- ☒ Vehicle Maintenance
- ☒ Construction
- ☒ Commercial Activities
- ☒ Roadways
- ☒ Waste Containment
- ☒ Housekeeping Practices

TARGETED POLLUTANTS

- ☒ Sediment
- ☒ Nutrients
- ☒ Heavy Metals
- ☒ Toxic Materials
- ☒ Oxygen Demanding Substances
- ☒ Oil & Grease
- ☒ Floatable Materials
- ☒ Bacteria & Viruses

- ☒ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

IMPLEMENTATION REQUIREMENTS

- ☒ Capital Costs
- ☐ O&M Costs
- ☐ Maintenance
- ☐ Training

- ☒ High ☒ Medium ☐ Low

BMP: Employee Training	ET
 <p>DESCRIPTION: Employee training, like equipment maintenance, is a method by which to implement BMPs. Employee training should be used in conjunction with all other BMPs as part of the facility's SWPPP.</p> <p>The specific employee training aspects of each of the source controls are highlighted in the individual information sheets. The focus of this information sheet is more general, and includes the overall objectives and approach for assuring employee training in stormwater pollution prevention. Accordingly, the organization of this information sheet differs somewhat from the other information sheets in this chapter.</p> <p>OBJECTIVES: Employee training should be based on four objectives:</p> <ul style="list-style-type: none"> < Promote a clear identification and understanding of the problem, including activities with the potential to pollute stormwater; < Identify solutions (BMPs); < Promote employee ownership of the problems and the solutions; and < Integrate employee feedback into training and BMP implementation. <p>APPROACH:</p> <ul style="list-style-type: none"> < Integrate training regarding stormwater quality management with existing training programs that may be required for other regulations. < Employee training is a vital component of many of the individual source control BMPs included in this manual. 	<p>PROGRAM ELEMENTS</p> <ul style="list-style-type: none"> : New Development : Residential : Commercial Activities : Industrial Activities : Municipal Facilities : Illegal Discharges  <p>TARGETED POLLUTANTS</p> <ul style="list-style-type: none"> ▲ Sediment ▲ Nutrients ▲ Heavy Metals ▲ Toxic Materials ▲ Oxygen Demanding Substances ▲ Oil & Grease ▲ Floatable Materials ▲ Bacteria & Viruses <div style="border: 1px solid black; padding: 5px;"> <p> <input type="checkbox"/> High Impact <input checked="" type="checkbox"/> Medium Impact <input type="checkbox"/> Low or Unknown Impact </p> </div> <p>IMPLEMENTATION REQUIREMENTS</p> <ul style="list-style-type: none"> : Capital Costs : O&M Costs 9 Regulatory ▲ Training : Staffing : Administrative <div style="border: 1px solid black; padding: 5px;"> <p> <input type="checkbox"/> High <input checked="" type="checkbox"/> Medium <input type="checkbox"/> Low </p> </div>



Diversion dikes can be used to contain storm water onsite

APPLICATIONS

- ☐ Manufacturing
- ☐ Material Handling
- ☐ Vehicle Maintenance
- ☒ Construction
- ☐ Commercial Activities
- ☒ Roadways
- ☐ Waste Containment
- ☐ Housekeeping Practices

DESCRIPTION:

Erosion and sediment control are generally two of the biggest problems on construction sites. Erosion control measures must be taken during a construction project. An Erosion Control Plan will be submitted and approved before work can begin on the project. An Erosion Control Plan describes what erosion control BMPs will be implemented, when and where, during the project. Erosion and sediment control measures should be installed before other construction activities begin.

APPROACH:

- Create a list of possible erosion control BMPs that could be implemented in any given project.
- Require submittal of erosion & sediment control plans for projects that are on 1 acre and larger sites.
- Develop a review checklist for plan review personnel.
- Provide the review checklist to contractors/developers so they know what is expected.
- Provide inspectors with a copy of the approved plans.
- Check to make sure erosion control measures are properly installed before beginning other construction activities.

LIMITATIONS:

- Must be enforced to be effective.
- Sometimes site conditions are different than planned on and the plans have to be modified.
- The erosion control measures have to be maintained.
- The BMPs have to be installed early on in the project.
- The BMPs have to be removed after the threat of erosion is no longer present.

TARGETED POLLUTANTS

- ☒ Sediment
- ☒ Nutrients
- ☐ Heavy Metals
- ☐ Toxic Materials
- ☐ Oxygen Demanding Substances
- ☐ Oil & Grease
- ☐ Floatable Materials
- ☐ Bacteria & Viruses

■ High Impact

- ☒ Medium Impact
- ☐ Low or Unknown Impact

IMPLEMENTATION REQUIREMENTS

- ☒ Capital Costs
- ☒ O&M Costs
- ☐ Maintenance
- ☒ Training

**APPLICATIONS**

- ☒ Manufacturing
- ☒ Material Handling
- ☒ Vehicle Maintenance
- ☒ Construction
- ☐ Commercial Activities
- ☐ Roadways
- ☒ Waste Containment
- ☒ Housekeeping Practices

DESCRIPTION:

Prevent or reduce the discharge of pollutants to stormwater from hazardous waste through proper material use, waste disposal, and training of employees and subcontractors.

APPLICATION:

Many of the chemicals used on-site can be hazardous materials which become hazardous waste upon disposal. These wastes may include:

- Paints and solvents, petroleum products such as oils, fuels and greases, herbicides and pesticides, acids for cleaning masonry, and concrete curing compounds.

In addition, sites with existing structures may contain wastes which must be disposed of in accordance with federal, state and local regulations, including:

- Sandblasting grit mixed with lead, cadmium or chromium based paints, asbestos, and PCBs.

INSTALLATION/APPLICATION CRITERIA:

The following steps will help reduce stormwater pollution from hazardous wastes:

- Use all of the product before disposing of the container.
- Do not remove the original product label, it contains important safety and disposal information.
- Do not over-apply herbicides and pesticides. Prepare only the amount needed. Follow the recommended usage instructions. Over-application is expensive and environmentally harmful. Apply surface dressings in several smaller applications, as opposed to one large application, to allow time for infiltration and to avoid excess material being carried off-site by runoff. Do not apply these chemicals just before it rains. People applying pesticides must be certified in accordance with Federal and State regulations.

LIMITATIONS:

Hazardous waste that cannot be reused or recycled must be disposed of by a licensed hazardous waste hauler.

MAINTENANCE:

- Inspect hazardous waste receptacles and areas regularly.
- Arrange for regular hazardous waste collection.

**TARGETED POLLUTANTS**

- ☐ Sediment
- ☐ Nutrients
- ☐ Heavy Metals
- ☒ Toxic Materials
- ☐ Oxygen Demanding Substances
- ☒ Oil & Grease
- ☐ Floatable Materials
- ☐ Bacteria & Viruses



- ☒ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

IMPLEMENTATION REQUIREMENTS

- ☐ Capital Costs
- ☒ O&M Costs
- ☒ Maintenance
- ☒ Training

- ☒ High
- ☐ Low
- ☒ Medium

BMP: Housekeeping Practices	HP
	<p>PROGRAM ELEMENTS</p> <p> <input type="checkbox"/> New Development <input checked="" type="checkbox"/> Residential <input type="checkbox"/> Commercial Activities <input type="checkbox"/> Industrial Activities <input checked="" type="checkbox"/> Municipal Facilities <input type="checkbox"/> Illegal Discharges </p>
<p>DESCRIPTION: Promote efficient and safe housekeeping practices (storage, use, and cleanup) when handling potentially harmful materials such as fertilizers, pesticides, cleaning solutions, paint products, automotive products, and swimming pool chemicals.</p> <p>APPROACH:</p> <ul style="list-style-type: none"> < Pattern a new program after the many established programs from municipalities around the country. Integrate this best management practice as much as possible with existing programs at your municipality. < This BMP has two key audiences: municipal employees and the general public. < For the general public, municipalities should establish a public education program that provides information on such items as storm water pollution and beneficial effects of proper disposal on water quality; reading product labels; safer alternative products; safe storage, handling, and disposal of hazardous products; list of local agencies; and emergency phone numbers. The programs listed below have provided this information through brochures or booklets that are available at a variety of locations including municipal offices, household hazardous waste collection events or facilities, and public information fairs. <p>Municipal facilities should develop controls on the application of pesticides, herbicides, and fertilizers in public right-of-ways and at municipal facilities. Controls may include:</p> <ul style="list-style-type: none"> < List of approved pesticides and selected uses. < Product and application information for users. < Equipment use and maintenance procedures. < Record keeping and public notice procedures. <p>LIMITATIONS: There are no major limitations to this best management practice.</p>	<div data-bbox="1055 646 1323 808">  </div> <p>TARGETED POLLUTANTS</p> <ul style="list-style-type: none"> ▲ Sediment ▲ Nutrients 9 Heavy Metals ▲ Toxic Materials ▲ Oxygen Demanding Substances ▲ Oil & Grease 9 Floatable Materials 9 Bacteria & Viruses <div data-bbox="1006 1249 1372 1333"> <p> <input type="checkbox"/> High Impact <input checked="" type="checkbox"/> Medium Impact <input type="checkbox"/> Low or Unknown Impact </p> </div> <p>IMPLEMENTATION REQUIREMENTS</p> <ul style="list-style-type: none"> 9 Capital Costs : O&M Costs 9 Regulatory ▲ Training : Staffing 9 Administrative <div data-bbox="1006 1627 1372 1661"> <p> <input type="checkbox"/> High <input checked="" type="checkbox"/> Medium <input type="checkbox"/> Low </p> </div>

BMP: Identifying Illicit Connections	IIC
 	<p>APPLICATIONS</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Manufacturing <input checked="" type="checkbox"/> Material Handling <input type="checkbox"/> Vehicle Maintenance <input checked="" type="checkbox"/> Construction <input checked="" type="checkbox"/> Commercial Activities <input type="checkbox"/> Roadways <input checked="" type="checkbox"/> Waste Containment <input type="checkbox"/> Housekeeping Practices
<p>DESCRIPTION: Involves the identification and elimination of illegal or inappropriate connections of industrial and business wastewater sources to the storm drain system. It attempts to prevent contamination of ground and surface water supplies by regulation, inspection, and removal of these connections. The large amount of storm and sanitary sewer pipes in a community creates a complex and often confusing system of utilities, so it is not unusual for improper connections to occur.</p> <p>APPROACH:</p> <ul style="list-style-type: none"> ➤ Discharges from industry and business may come from a variety of sources including process wastewater, wash waters, and sanitary wastewater. The following methods are often used for identifying improper industrial discharges to the storm drain system ➤ <i>Visual Inspection.</i> A physical examination of piping connections or analysis by closed circuit camera is used to identify possible illicit connection sites. ➤ <i>Piping Schematic Review.</i> Architectural plans and plumbing details are examined for potential sites where improper connections have occurred. ➤ <i>Smoke Testing.</i> Smoke testing is used to locate connections by injecting a non-toxic vapor (smoke) into the system and following its path of travel. ➤ <i>Dye Testing.</i> Colored dye is added to the drain water in suspect piping. Dyed water appearing in the storm drain system indicates an illegal connection, possibly between the sanitary sewer system and the storm drain. ➤ Instituting building and plumbing codes to prevent connections of potentially hazardous pollutants to storm drains. ➤ <i>Flow Monitoring.</i> Monitoring increases in storm sewer flows during dry periods can also lead investigators to sources of infiltration due to improper connections. ➤ <i>Inspection using video equipment</i> ➤ Instituting building and plumbing codes to prevent connections of potentially hazardous pollutants to storm drains. <p>LIMITATIONS:</p> <ul style="list-style-type: none"> ➤ A local ordinance is necessary to provide investigators with access to private property in order to perform field tests (Ferguson et al. 1997). ➤ Rain fall can hamper efforts to monitor flows and visual inspections. <p>MAINTENANCE:</p> <ul style="list-style-type: none"> ➤ Identifying illicit discharges requires teams of at least two people (volunteers can be used), plus administrative personnel, depending on the complexity of the storm sewer system. 	<p>TARGETED POLLUTANTS</p> <ul style="list-style-type: none"> <input type="checkbox"/> Sediment <input checked="" type="checkbox"/> Nutrients <input checked="" type="checkbox"/> Heavy Metals <input checked="" type="checkbox"/> Toxic Materials <input checked="" type="checkbox"/> Oxygen Demanding Substances <input checked="" type="checkbox"/> Oil & Grease <input checked="" type="checkbox"/> Floatable Materials <input checked="" type="checkbox"/> Bacteria & Viruses <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p> <input checked="" type="checkbox"/> High Impact <input checked="" type="checkbox"/> Medium Impact <input type="checkbox"/> Low or Unknown Impact </p> </div> <p>IMPLEMENTATION REQUIREMENTS</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Capital Costs <input checked="" type="checkbox"/> O&M Costs <input checked="" type="checkbox"/> Maintenance <input type="checkbox"/> Training <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p> <input checked="" type="checkbox"/> High <input checked="" type="checkbox"/> Medium <input type="checkbox"/> Low </p> </div>

BMP: Illegal Solids Dumping Control	ISDC
	<p>APPLICATIONS</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Manufacturing <input checked="" type="checkbox"/> Material Handling <input type="checkbox"/> Vehicle Maintenance <input checked="" type="checkbox"/> Construction <input checked="" type="checkbox"/> Commercial Activities <input checked="" type="checkbox"/> Roadways <input checked="" type="checkbox"/> Waste Containment <input checked="" type="checkbox"/> Housekeeping Practices
<p>DESCRIPTION: By locating and correcting illegal dumping practices through education and enforcement measures, the many risks to public safety and water quality associated with illegal disposal actions can be prevented. Illegal dumping control is important to preventing contaminated runoff from entering wells and surface water, as well as averting flooding due to blockages of drainage channels for runoff.</p> <p>APPROACH:</p> <ul style="list-style-type: none"> ➤ Illegal dumping can occur in both urban and rural settings and can happen in all geographic regions. ➤ Illegal dumping control programs focus on community involvement and targeted enforcement to eliminate or reduce illegal dumping practices. ➤ Control programs use a combination of public education, citizen participation, site maintenance, and authorized enforcement measures to address illegal waste disposal. ➤ Issues that need to be examined when creating a program include the following: The locations of persistent illegal dumping activity Types of waste dumped and the profile of dumpers ➤ Possible driving forces behind illegal dumping such as excessive user fees, restrictive curbside trash pickup, or ineffective recycling programs. Previous education and cleanup efforts, Current control programs and local laws or ordinances addressing the problem, Sources of funding and additional resources that may be required. <p>LIMITATIONS:</p> <ul style="list-style-type: none"> ➤ Illegal dumping is often spurred by cost and convenience considerations, and a number of factors encourage this practice ➤ A lack of understanding regarding applicable laws or the inadequacy of existing laws may also contribute to the problem. <p>MAINTENANCE:</p> <ul style="list-style-type: none"> ➤ Efforts need to be continual. 	 <p>TARGETED POLLUTANTS</p> <ul style="list-style-type: none"> <input type="checkbox"/> Sediment <input checked="" type="checkbox"/> Nutrients <input checked="" type="checkbox"/> Heavy Metals <input checked="" type="checkbox"/> Toxic Materials <input checked="" type="checkbox"/> Oxygen Demanding Substances <input checked="" type="checkbox"/> Oil & Grease <input checked="" type="checkbox"/> Floatable Materials <input checked="" type="checkbox"/> Bacteria & Viruses <div style="border: 1px solid black; padding: 5px;"> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> High Impact <input checked="" type="checkbox"/> Medium Impact <input type="checkbox"/> Low or Unknown Impact </div> <p>IMPLEMENTATION REQUIREMENTS</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Capital Costs <input checked="" type="checkbox"/> O&M Costs <input checked="" type="checkbox"/> Maintenance <input type="checkbox"/> Training <div style="border: 1px solid black; padding: 5px;"> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> High <input checked="" type="checkbox"/> Medium <input type="checkbox"/> Low </div>

BMP: Infrastructure Planning

IPL



Developers can design streets and pedestrian paths to maximize convenience and safety while at the same time minimizing impervious surface area
(Source: The Rouse Company, no date)

APPLICATIONS

- ☐ Manufacturing
- ☐ Material Handling
- ☐ Vehicle Maintenance
- ☒ Construction
- ☒ Commercial Activities
- ☒ Roadways
- ☐ Waste Containment
- ☐ Housekeeping Practices

DESCRIPTION:

This practice requires changes in the regional growth planning process to contain sprawl development. Sprawl development is the expansion of low-density development into previously undeveloped land. The American Farmland Trust has estimated that the United States is losing about 50 acres an hour to suburban and exurban development (Longman, 1998). This sprawl development requires local governments to extend public services to new residential communities whose tax payments often do not cover the cost of providing those services. For example, in Prince William County, Virginia, officials have estimated that the costs of providing services to new residential homes exceeds what is brought in from taxes and other fees by \$1,600 per home (Shear and Casey, 1996).

Infrastructure planning makes wise decisions to locate public services—water, sewer, roads, schools, and emergency services—in the suburban fringe and direct new growth into previously developed areas, discouraging

low-density development. Generally, this is done by drawing a boundary or envelope around a community, beyond which major public infrastructure investments are discouraged or not subsidized. Meanwhile, economic and other incentives are provided within the boundary to encourage growth in existing neighborhoods.

APPROACH:

- Sprawl development negatively impacts water quality in several ways. The most significant impact comes from the increase in impervious cover that is associated with sprawl growth. In addition to rooftop impervious area from new development, extension of road systems and additions of paved surface from driveways create an overall increase in imperviousness.
- Urban Growth Boundaries. This planning tool establishes a dividing line that defines where a growth limit is to occur and where agricultural or rural land is to be preserved. Often, an urban services area is included in this boundary that creates a zone where public services will not be extended.
- Infill/Community Redevelopment. This practice encourages new development in unused or underutilized land in existing urban areas. Communities may offer tax breaks or other economic incentives to developers to promote the redevelopment of properties that are vacant or damaged.

LIMITATIONS:

- Intense development of existing areas can create a new set of challenges for storm water program managers. Storm water management solutions are often more difficult and complex in ultra-urban areas than in suburban areas.
- Infrastructure planning is often done on a regional scale and requires a cooperative effort between all the communities within a given region in order to be successful.

TARGETED POLLUTANTS

- ☒ Sediment
- ☐ Nutrients
- ☐ Heavy Metals
- ☐ Toxic Materials
- ☐ Oxygen Demanding Substances
- ☐ Oil & Grease
- ☐ Floatable Materials
- ☐ Bacteria & Viruses

- ☒ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

IMPLEMENTATION REQUIREMENTS

- ☒ Capital Costs
- ☒ O&M Costs
- ☒ Maintenance
- ☐ Training

- ☒ High ☒ Medium ☐ Low

BMP: Landscape & Irrigation Plan

LIP



DESCRIPTION:

All developers are required to submit a landscape and irrigation plan for their developments. Lawn and garden activities can result in contamination of storm water through pesticide, soil, and fertilizer runoff. Proper landscape management, however, can effectively reduce water use and contaminant runoff as well as enhance the aesthetics of a property.

APPROACH:

- Develop landscape and irrigation plan preparation guidelines.
- Require a landscape and irrigation plan for each new commercial development.
- Educate local developers on how to create effective landscape and irrigation plans for their new developments.
- Educate municipal staff to review property landscape and irrigation plans to minimize runoff.
- Check all new irrigation plans to ensure that there will be no overspray onto impervious surfaces and that the irrigation water will be contained on site.
- Uniform coverage for sprinkler systems should be checked to help minimize over watering.

LIMITATIONS:

- More time and effort will be required of the municipal staff to review new development plans.
- Some communities do not have the expertise to complete proper reviews in-house.

MAINTENANCE:

- Programs and educational materials can be repeatedly sent out or emphasized. Extension service continues to research and provide current data.

APPLICATIONS

- ☒ Manufacturing
- ☐ Material Handling
- ☐ Vehicle Maintenance
- ☒ Construction
- ☒ Commercial Activities
- ☐ Roadways
- ☐ Waste Containment
- ☒ Housekeeping Practices


TARGETED POLLUTANTS

- ☐ Sediment
- ☒ Nutrients
- ☐ Heavy Metals
- ☐ Toxic Materials
- ☐ Oxygen Demanding Substances
- ☒ Oil & Grease
- ☐ Floatable Materials
- ☐ Bacteria & Viruses

- ☒ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

IMPLEMENTATION REQUIREMENTS

- ☒ Capital Costs
- ☒ O&M Costs
- ☐ Maintenance
- ☒ Training

BMP: Map Storm Water Drains	MSWD
	<p style="text-align: center;">APPLICATIONS</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Manufacturing <input type="checkbox"/> Material Handling <input type="checkbox"/> Vehicle Maintenance <input checked="" type="checkbox"/> Construction <input checked="" type="checkbox"/> Commercial Activities <input type="checkbox"/> Roadways <input checked="" type="checkbox"/> Waste Containment <input type="checkbox"/> Housekeeping Practices
	<p>DESCRIPTION: Develop an integrated storm water sewer system map that identifies existing piping, open channels, storm drain outfalls, receiving water bodies and retention/detention basins.</p> <p>APPROACH:</p> <ul style="list-style-type: none"> ➤ Determine if effort will be out-sourced or completed in-house ➤ Compile existing drawings ➤ Gather drawings of new developments ➤ Convert drawings of new developments ➤ Identify any possible illegal discharges ➤ Use in determining possible causes of a pollution ➤ Require new developments to supply city with updated drainage maps to be integrated into the system. <p>LIMITATIONS:</p> <ul style="list-style-type: none"> ➤ Some additional surveying may need to be done on existing structures ➤ Training may be required to familiarize with software <p>MAINTENANCE:</p> <ul style="list-style-type: none"> ➤ Map will need to be updated constantly as new developments arise ➤ Checks and changes may be necessary as as-builds and differences are discovered ➤ Inspection
	<p style="text-align: center;">TARGETED POLLUTANTS</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Sediment <input checked="" type="checkbox"/> Nutrients <input checked="" type="checkbox"/> Heavy Metals <input checked="" type="checkbox"/> Toxic Materials <input checked="" type="checkbox"/> Oxygen Demanding Substances <input checked="" type="checkbox"/> Oil & Grease <input checked="" type="checkbox"/> Floatable Materials <input checked="" type="checkbox"/> Bacteria & Viruses <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p> <input checked="" type="checkbox"/> High Impact <input checked="" type="checkbox"/> Medium Impact <input type="checkbox"/> Low or Unknown Impact </p> </div> <p style="text-align: center; margin-top: 20px;">IMPLEMENTATION REQUIREMENTS</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Capital Costs <input type="checkbox"/> O&M Costs <input type="checkbox"/> Maintenance <input type="checkbox"/> Training

**NO
DUMPING**



**WE ALL LIVE
DOWNSTREAM**

APPLICATIONS

- ☒ Manufacturing
- ☐ Material Handling
- ☒ Vehicle Maintenance
- ☐ Construction
- ☒ Commercial Activities
- ☐ Roadways
- ☒ Waste Containment
- ☒ Housekeeping Practices

DESCRIPTION:

Eliminate non-stormwater discharges to the stormwater collection system. Non-stormwater discharges may include: process wastewaters, cooling waters, wash waters, and sanitary wastewater.

APPROACH:

The following approaches may be used to identify non-stormwater discharges:

- **Visual Inspection:** the easiest method is to inspect each discharge point during dry weather. Keep in mind that drainage from a storm event can continue for three days or more and groundwater may infiltrate the underground stormwater collection system.
- **Piping Schematic Review:** The piping schematic is a map of pipes and drainage systems used to carry wastewater, cooling water, sanitary wastes, etc.... A review of the "as-built" piping schematic is a way to determine if there are any connections to the stormwater collection system. Inspect the path of floor drains in older buildings.
- **Smoke Testing:** Smoke testing of wastewater and stormwater collection systems is used to detect connections between the two systems. During dry weather the stormwater collection system is filled with smoke and then traced to sources. The appearance of smoke at the base of a toilet indicates that there may be a connection between the sanitary and the stormwater system.
- **Dye Testing:** A dye test can be performed by simply releasing a dye into either the sanitary or process wastewater system and examining the discharge points from the stormwater collection system for discoloration.

LIMITATIONS:

- Many facilities do not have accurate, up-to-date schematic drawings.
- Video and visual inspections can identify illicit connections to the storm sewer, but further testing is sometimes required (e.g. dye, smoke) to identify sources.



TARGETED POLLUTANTS

- ☐ Sediment
 - ☒ Nutrients
 - ☒ Heavy Metals
 - ☒ Toxic Materials
 - ☒ Oxygen Demanding Substances
 - ☒ Oil & Grease
 - ☒ Floatable Materials
 - ☒ Bacteria & Viruses
- ☒ High Impact
 - ☒ Medium Impact
 - ☐ Low or Unknown Impact

IMPLEMENTATION REQUIREMENTS

BMP: Ordinance Development

OD



APPLICATIONS

- ☒ Manufacturing
- ☒ Material Handling
- ☒ Vehicle Maintenance
- ☒ Construction
- ☒ Commercial Activities
- ☒ Roadways
- ☒ Waste Containment
- ☒ Housekeeping Practices

DESCRIPTION:

Existing ordinances relating to storm water are reviewed for compliance. New ordinances are written to prohibit non-storm water discharges into the Municipal Separate Storm Sewer System (MS4), require proper erosion and sediment controls on construction sites, require the implementation of post-construction runoff controls, and to ensure proper planning/zoning protections.

APPROACH:

- Review existing storm drain ordinances for consistency and compliance with state and federal regulations and make improvements, if necessary. Ensure that no conflicts will occur with new ordinances that will be written and adopted.
- Write and adopt an ordinance that prohibits (to the extent allowable under State, Tribal, or local law) the discharge of non-storm water discharges into the MS4 with appropriate enforcement procedures and actions.
- Write and adopt an ordinance, with sanctions to ensure compliance, requiring the implementation of proper erosion and sediment controls, and controls for other wastes, on applicable construction sites.
- Write and adopt an ordinance requiring the implementation of post-construction runoff controls to the extent allowable under State, Tribal, or local law.
- Educate the public about the new ordinances.
- Enforce the new ordinances.

LIMITATIONS:

- Wording of ordinances is often difficult. It should be specific to serve the intended purpose, but not too specific to cause potential conflicts with other ordinances or situations.
- Once an ordinance is adopted, it can be difficult to modify ordinances to meet changing needs.
- Ordinances have to be enforced to be beneficial.
- Ordinances take time to change.

TARGETED POLLUTANTS



- ☒ Sediment
- ☒ Nutrients
- ☒ Heavy Metals
- ☒ Toxic Materials
- ☒ Oxygen Demanding Substances
- ☒ Oil & Grease
- ☒ Floatable Materials
- ☒ Bacteria & Viruses

- ☒ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

IMPLEMENTATION REQUIREMENTS

- ☒ Capital Costs
- ☐ O&M Costs
- ☐ Maintenance
- ☐ Training

- ☒ High ☒ Medium ☐ Low

BMP: Public Education/Participation	PEP						
	<p>PROGRAM ELEMENTS</p> <p>9 New Development : Residential : Commercial Activities 9 Industrial Activities : Municipal Facilities : Illegal Discharges</p>						
<p>DESCRIPTION: Public education/participation, like an ordinance or a piece of equipment, is not so much a best management practice as it is a method by which to implement BMPs. This information sheet highlights the importance of integrating elements of public education and participation into a municipality's overall plan for stormwater quality management.</p> <p>A public education and participation plan provides the municipality with a strategy for educating its employees, the public, and businesses about the importance of protecting stormwater from improperly used, stored, and disposed of pollutants. Municipal employees must be trained, especially those that work in departments not directly related to stormwater but whose actions affect stormwater. Residents must become aware that a variety of hazardous products are used in the home and that their improper use and disposal can pollute stormwater. Increased public awareness also facilitates public scrutiny of industrial and municipal activities and will likely increase public reporting of incidents.</p> <p>APPROACH:</p> <ul style="list-style-type: none">< Pattern a new program after the many established programs around the country.< Implement public education/participation as a coordinated campaign in which each message is related to the last.< Present a clear and consistent message and image to the public regarding how they contribute to stormwater pollution and what they can do to reduce it.< Utilize multi-media to reach the full range of audiences.< Translate messages into the foreign languages of the community to reach the full spectrum of your populace and to avoid misinterpretation of messages.< Create an awareness and identification with the local watershed.< Use everyday language in all public pieces. Use outside reviewers to highlight and reduce the use of technical terminology, acronyms, and jargon.< Make sure all statements have a sound, up-to-date technical basis. Do not contribute to the spread of misinformation.< Break complicated subjects into smaller more simple concepts. Present these concepts to the public in a metered and organized way to avoid "overloading" and confusing the audience. <p>LIMITATIONS: None</p>	<div></div> <p>TARGETED POLLUTANTS</p> <ul style="list-style-type: none">▲ Sediment▲ Nutrients▲ Heavy Metals▲ Toxic Materials▲ Oxygen Demanding Substances▲ Oil & Grease▲ Floatable Materials▲ Bacteria & Viruses <div><table><tr><td><input type="checkbox"/> High Impact</td></tr><tr><td><input checked="" type="checkbox"/> Medium Impact</td></tr><tr><td><input type="checkbox"/> Low or Unknown Impact</td></tr></table></div> <p>IMPLEMENTATION REQUIREMENTS</p> <ul style="list-style-type: none">▲ Capital Costs: O&M Costs9 Regulatory<ul style="list-style-type: none">: Training: Staffing: Administrative <div><table><tr><td><input type="checkbox"/> High</td><td><input checked="" type="checkbox"/> Medium</td><td><input type="checkbox"/> Low</td></tr></table></div>	<input type="checkbox"/> High Impact	<input checked="" type="checkbox"/> Medium Impact	<input type="checkbox"/> Low or Unknown Impact	<input type="checkbox"/> High	<input checked="" type="checkbox"/> Medium	<input type="checkbox"/> Low
<input type="checkbox"/> High Impact							
<input checked="" type="checkbox"/> Medium Impact							
<input type="checkbox"/> Low or Unknown Impact							
<input type="checkbox"/> High	<input checked="" type="checkbox"/> Medium	<input type="checkbox"/> Low					



Used oil can be disposed of at a waste collection facility, where it will be collected and later sent to a recycling facility.

APPLICATIONS

- ☒ Manufacturing
- ☒ Material Handling
- ☐ Vehicle Maintenance
- ☒ Construction
- ☒ Commercial Activities
- ☐ Roadways
- ☒ Waste Containment
- ☒ Housekeeping Practices

DESCRIPTION:

Used motor oil is a hazardous waste because it contains heavy metals picked up from the engine during use. Since it is toxic to humans, wildlife, and plants, it should be disposed of at a local recycling or disposal facility.

APPROACH:

- When establishing oil recycling programs, municipalities should provide the public with the proper informational resources.
- The public can also call 1-800-RECYCLE or contact Earth's 911 at www.1800cleanup.org/ for more information.
- Municipalities also need to address oil filter recycling in their recycling programs.
- To make recycling motor oil more convenient for the do-it-yourselfers, oil recycling programs should be located throughout all communities.
- Two types of programs currently in use are drop-off locations and curbside collection. Drop-off locations include service stations, recycling centers, auto parts retail stores, quick lubes, and landfills.

LIMITATIONS:

- If oil is mixed with other substances or if storage containers have residues of other substances, this can contaminate oil and make it a hazardous waste.➤

MAINTENANCE:

- Costs for used motor oil recycling programs vary depending on whether a community has already established similar types of recycling programs.
- Major costs associated with oil recycling programs include advertisement costs and oil collection costs.



TARGETED POLLUTANTS


- ☒ Sediment
- ☐ Nutrients
- ☒ Heavy Metals
- ☒ Toxic Materials
- ☐ Oxygen Demanding Substances
- ☒ Oil & Grease
- ☒ Floatable Materials
- ☐ Bacteria & Viruses

- ☒ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

IMPLEMENTATION REQUIREMENTS

- ☒ Capital Costs
- ☒ O&M Costs
- ☒ Maintenance
- ☐ Training

- ☒ High
- ☒ Medium
- ☐ Low

BMP: Using the Media	UM
	<p>APPLICATIONS</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Manufacturing <input checked="" type="checkbox"/> Material Handling <input checked="" type="checkbox"/> Vehicle Maintenance <input checked="" type="checkbox"/> Construction <input checked="" type="checkbox"/> Commercial Activities <input checked="" type="checkbox"/> Roadways <input checked="" type="checkbox"/> Waste Containment <input checked="" type="checkbox"/> Housekeeping Practices
<p>DESCRIPTION:</p> <p>The media can be strong allies to a storm water pollution prevention campaign in educating the public about storm water issues. Through the media, a program can educate targeted or mass audiences about problems and solutions, build support for remediation and retrofit projects, or generate awareness and interest in storm water management. Best of all, packaging a storm water message as a news story is virtually free!</p> <p>APPROACH:</p> <ul style="list-style-type: none"> ➤ Newspapers and Magazines. Newspapers are powerful vehicles for delivering educational information, policy analyses, public notices, and other messages. Many displays at watershed seminars proudly post newspaper articles on the projects being presented in recognition of the importance and impact of newspaper coverage. ➤ Newspapers can be accessed in several ways. Depending on the message or event, the appropriate format might be a news release, news advisory, query letter, letter to the editor, or (for urgent, timely information) a news conference. ➤ Magazines. Magazines, like newspapers, allow for greater length and analysis than television and provide the additional benefit of targeting specific audiences (e.g., landscapers, automobile mechanics, farmers, or recreationists). ➤ Radio. In spite of the popularity of video, radio remains a strong media contender due to its affordable production costs and creative possibilities. Further, commuters who drive to work spend much time in their vehicles. ➤ Television. Television is the primary source of news for the majority of the population, and local reporters are generally interested in covering environmental stories that pertain to their area. ➤ Issues will attract television coverage if they involve local people or issues, focus on unique or unusual attributes, affect many people throughout a region, involve controversy or strong emotions. ➤ Internet Message. Increasingly, the Internet is becoming a powerful means of communication. It provides worldwide access to hundreds of thousands of sites containing millions of documents, chat rooms for special interest groups, and incredible database/mapping features. <p>LIMITATIONS:</p> <ul style="list-style-type: none"> ➤ Working with the media is essentially free, but not always. 	<p>TARGETED POLLUTANTS</p> <ul style="list-style-type: none"> ■ Sediment ■ Nutrients ■ Heavy Metals ■ Toxic Materials ■ Oxygen Demanding Substances ■ Oil & Grease ■ Floatable Materials ■ Bacteria & Viruses <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p> <input type="checkbox"/> High Impact <input checked="" type="checkbox"/> Medium Impact <input type="checkbox"/> Low or Unknown Impact </p> </div> <p>IMPLEMENTATION REQUIREMENTS</p> <ul style="list-style-type: none"> <input type="checkbox"/> Capital Costs <input type="checkbox"/> O&M Costs <input type="checkbox"/> Maintenance <input type="checkbox"/> Training <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p> <input type="checkbox"/> High <input checked="" type="checkbox"/> Medium <input type="checkbox"/> Low </p> </div>

BMP: Zoning

ZO



Property boundaries differ widely between traditional large-lot zoning, which maximizes the acreage of individual properties, and conservation zoning, which maximizes the amount of undeveloped space (Source: SCA).

DESCRIPTION:

Zoning is a classification scheme that can serve numerous functions and can help mitigate storm water runoff problems by facilitating better site designs. By correctly applying the right zoning technique, development can be targeted into specific areas, limiting development in other areas and providing protection for the most important land conservation areas.

APPROACH:

- Impervious Overlay Zoning: This type of overlay zoning limits future impervious areas.
- Incentive Zoning: This planning technique relies on bonuses or incentives for developers to encourage the creation of certain amenities or land use designs. A developer is granted the right to build more intensively on a property or given some other bonus in exchange for an amenity or a design that the community considers beneficial.
- Performance Zoning: Performance zoning is a flexible approach that has been employed in a variety of fashions in several different communities across the country. Some performance factors include traffic or noise generation limits, lighting requirements, storm water runoff quality and quantity criteria, protection of wildlife and vegetation, and even architectural style criteria.
- Urban Growth Boundaries: Urban growth boundaries are sometimes called development service districts and include areas where public services are already provided (e.g., sewer, water, roads, police, fire, and schools).

LIMITATIONS:

- Some zoning techniques may be limited by economic and political acceptance and should be evaluated on these criteria as well as storm water management goals.

APPLICATIONS

- ☐ Manufacturing
- ☐ Material Handling
- ☐ Vehicle Maintenance
- ☒ Construction
- ☒ Commercial Activities
- ☐ Roadways
- ☐ Waste Containment
- ☐ Housekeeping Practices

TARGETED POLLUTANTS

- ☒ Sediment
- ☐ Nutrients
- ☐ Heavy Metals
- ☐ Toxic Materials
- ☐ Oxygen Demanding Substances
- ☐ Oil & Grease
- ☐ Floatable Materials
- ☐ Bacteria & Viruses

- ☒ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

IMPLEMENTATION REQUIREMENTS

- ☒ Capital Costs
- ☒ O&M Costs
- ☒ Maintenance
- ☐ Training

- ☒ High ☒ Medium ☐ Low

APPENDIX A

SUPPLEMENTAL GUIDE TO STORM WATER MANAGEMENT FOR CONTRACTORS AND DEVELOPERS

Special Environmental Concerns
Hydrologic Method and Considerations
Kaysville City LID Handbook
Process for Including Water Quality in City Projects
SWPPP Inspection Checklist
SWPPP Review Criteria
Construction Inspection Form (DWQ)
Inspection Authority
Enforcement Procedures
NOT Procedures
Construction BMP Fact Sheets
Standard Details
Maintenance SOPs
Maintenance Agreement

APPENDIX B

SUPPLEMENTAL GUIDE TO STORM WATER MANAGEMENT FOR PUBLIC WORKS DEPARTMENTS

Standard Operating Procedures (SOP) Including Department or
Responsible Parties
BMP Fact Sheets
SWPPP Review Criteria
SWPPP Inspection Checklist
Construction Inspection Form (DWQ)
NOT Procedures
Retrofitting Existing Infrastructure
Process for Including Water Quality in City Projects
Inventory of City Operated Facilities and Storm Water Controls
Assessment of City Owned Facilities
Floor Drain Inventory
Facility Storm Drain Maps

APPENDIX C

ILLCIT DISCHARGE DETECTION AND ELIMINATION (IDDE) PROGRAM

Dry Weather Screening Checklist
Dry Weather Visual Monitoring Form
Dry Weather Screening Flow Chart
Incoming Call Report Form
Spill Response Report Form
Illicit Discharge Inspection Report Inventory
Construction Site Enforcement Log
IDDE BMP Fact Sheets
IDDE SOPS

APPENDIX D

GENERAL PROGRAM DOCUMENTATION

Inspection Forms
Enforcement Logs
Training Logs
Annual Report
Maintenance Records
Observation Reports

APPENDIX E

CURRENT CITY ORDINANCE APPLICABLE TO STORM WATER

All City Ordinances are available online at the link below

[https://kaysville.municipalcodeonline.com/book?type=code#
name=Preface](https://kaysville.municipalcodeonline.com/book?type=code#name=Preface)

Titles Relevant to the Storm Water Program Include:

TITLE 8 – COMMUNITY DEVELOPMENT
TITLE 9 – PUBLIC WORKS
TITLE 17 – PLANNING AND ZONING
TITLE 18 – BUILDING REGULATIONS
TITLE 19 – SUBDIVISIONS

APPENDIX F

STATE PERMITS AND DOCUMENTS REGULATING THE KAYSVILLE CITY STORM WATER PROGRAM

General Permit for Discharges from Small Ms4s – UTR090000
effective 5/12/2021 –

<https://documents.deq.utah.gov/water-quality/facilities/general-storm-water-permit-common-plan/DWQ-2021-008110.pdf>

UPDES Construction General Permit Number UTRC00000
effective July 8, 2020 –

<https://documents.deq.utah.gov/water-quality/stormwater/construction/DWQ-2020-013890.pdf>

Davis County Storm Water Coalition Interlocal Agreement

APPENDIX G

SYSTEM MAPS AND INVENTORIES

City Owned Facilities Inventory
Assessment of City Owned Facilities
Outfalls/Monitoring Locations Inventory
Post Construction BMP Inventory
Enforcement Action Log
Active Construction Sites Inventory
Illicit Discharge Inspection Log
Collection System
Floor Drains
Facility Storm Drain Maps